PUBLIC NOTICE
LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY (LDEQ)
MT. ZION C & D, LLC, MT. ZION ROAD C & D SITE
TECHNICALLY COMPLETE SOLID WASTE PERMIT RENEWAL APPLICATION

The LDEQ, Office of Environmental Services, has determined that a solid waste permit renewal application for the Mt. Zion C&D, LLC, 1101 Russell Road, Shreveport, LA 71137 for the Mt. Zion Road C & D Disposal Site is technically complete and acceptable for public review. **The facility is located at 687 Mt. Zion Road, Shreveport, Caddo Parish.**

Mt Zion C&D Landfill, LLC requested a renewal permit for its existing construction and demolition debris / woodwaste landfill.

Written comments, written requests for a public hearing or written requests for notification of the final decision regarding this permit action may be submitted to Ms. Soumaya Ghosn at LDEQ, Public Participation Group, P.O. Box 4313, Baton Rouge, LA 70821-4313. **Written comments and/or written requests must be received by 12:30 p.m., Thursday, January 15, 2009.** Written comments will be considered prior to a final permit decision.

If LDEQ finds a significant degree of public interest, a public hearing will be held. LDEQ will send notification of the final permit decision to the applicant and to each person who has submitted written comments or a written request for notification of the final decision.

The technically complete solid waste permit renewal application is available for review at the LDEQ Public Records Center, Room 127, 602 North 5th Street, Baton Rouge, LA. Viewing hours are from 8:00 a.m. to 4:30 p.m., Monday through Friday (except holidays). **The available information can also be accessed electronically on the Electronic Document Management System (EDMS) on the DEQ public website at www.deq.louisiana.gov.**

Additional copies may be reviewed at the Shreve Memorial Library, Hamilton/South Caddo Branch, 2111 Bert Kouns Industrial Loop, Shreveport, LA 71118, the City of Shreveport Mayor's Office, 505 Travis Street, Suite 200, Shreveport, LA and the LDEQ-Northwest Regional Office, 1525 Fairfield Avenue, Room 529, Shreveport, LA.

Inquiries or requests for additional information regarding this permit action should be directed to Curt A. Auzenne, LDEQ, Waste Permits Division, P.O. Box 4313, Baton Rouge, LA 70821-4313, phone (225) 219-3468.

Persons wishing to be included on the LDEQ permit public notice mailing list or for other public participation related questions should contact the Public Participation Group in writing at LDEQ, P.O. Box 4313, Baton Rouge, LA 70821-4313, by email at deqmaillistrequest@la.gov or contact the LDEQ Customer Service Center at (225) 219-LDEQ (219-5337).

Permit public notices including electronic access to general information from the technically complete solid waste permit renewal application can be viewed at the LDEQ permits public notice webpage at www.deq.louisiana.gov/apps/pubNotice/default.asp and general information related to the public participation in permitting activities can be viewed at www.deq.louisiana.gov/portal/tabid/2198/Default.aspx.

Alternatively, individuals may elect to receive the permit public notices via email by subscribing to the LDEQ permits public notice List Server at www.doa.louisiana.gov/oes/listservpage/ldeq_pn_listserv.htm

All correspondence should specify AI Number 52368, Permit Number OU-0155, and Activity Number PER20070001.

Scheduled Publication Date: December 12, 2008

COPY

ARCADIS
Infrastructure, environment, facilities

LDEQ RECEIPT

2008 AUG 13 AM 10 12

ARCADIS
10352 Plaza Americana Drive
Baton Rouge
Louisiana 70816
Tel 225 292 1004
Fax 225 218 9677
www.arcadis-us.com

Mr. Bijan Sharafkhani, Administrator
Waste Permits Division
Office of Environmental Services
Louisiana Department of Environmental Quality
P. O. Box 4313
Baton Rouge, Louisiana 70821-4313

original to JOSW
copy to SW/Auzenne PARR

ENVIRONMENT

Subject:
Request for Final Copies
Mt. Zion Disposal Site
Solid Waste Permit Application
Agency Interest No. 52368/OU-0155/D-017-2819/PER20070001
Caddo Parish, Louisiana

Date:
12 August 2008

Contact:
George H. Cramer, P.G.

Extension:
228

Email:
george.cramer@arcadis-us.com

Our ref:
LA002706.0001.00001
Harrelson/2706.1/C/Mt. Zion/30/egp

Dear Mr. Sharafkhani:

ARCADIS is pleased to submit six copies of the above-referenced solid waste permit application in accordance with the request from your office dated August 1, 2008. The application is based on the original submitted application and incorporates all previously accepted revisions.

If there are any questions concerning this submittal, please contact the undersigned at (225) 292-1004 or Mr. Michael Harrelson at (318) 286-6882.

Sincerely,

ARCADIS

George H. Cramer, II, P.G.
Associate Vice President/Principal Hydrogeologist

GHC:egp

Copies:
Ms. Linda M. Brown/LDEQ
Mr. Curt Auzenne/LDEQ
Mr. Michael Harrelson/HMM
John Shortess, Esq./Phelps Dunbar

RECEIVED
AUG 13 2008
LDEQ

ARCADIS

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Imagine the result

Solid Waste Permit Application

Mt. Zion Road C & D Site
687 Mount Zion Road
Shreveport, Louisiana 71107

30 April 2008

ARCADIS

Pamela S. McIlwain
Project Scientist

George H. Cramer, II, P.G.
Associate Vice President/Principal Scientist

Solid Waste Permit Application

Mt. Zion Road C & D Site
687 Mount Zion Road
Shreveport, Louisiana 71107

Prepared for:
Harrelson Materials Management, Inc.

Prepared by:
ARCADIS
10352 Plaza Americana Drive
Baton Rouge
Louisiana 70816
Tel 225 292 1004
Fax 225 218 9677

Our Ref.:
LA002706.0001.00001

Date:
30 April 2008

Media Type (check one)
Hazardous Waste ☐ Air ☐
Solid Waste ☒ Water ☐
Radiation Licensing ☐

Agency Interest Number: 52368
Is this a copy of a previously submitted form? Yes ☐ No ☒
If yes, indicate the original submittal date: ____
If yes, indicate the original permit number: ____

Department of Environmental Quality Permits Division P.O. Box 4313 Baton Rouge, LA 70821-4313 (225) 219-3181	**Addendum to Permit Applications per LAC 33:I.1701**	

Please Type Or Print	Company Name Mt. Zion C & D, LLC	☒ Owner ☐ Operator	For Permits Division Use Only
	Parent Company (if Company Name given above is a division) N/A		
	Plant name (if any) Mt. Zion Road C & D Site		
	Nearest town Shreveport	Parish where located Caddo	

1. Does the company or owner have federal or state environmental permits identical to, or of a similar nature to, the permit for which you are applying in other states? (This requirement applies to all individuals, partnerships, corporations, or other entities who own a controlling interest of 50% or more in your company, or who participate in the environmental management of the facility for an entity applying for the permit or an ownership interest in the permit.)

   ☒ Permits in Louisiana. List Permit Numbers: LAR05M624 and RI-13876

   ☐ Permits in other states (list states): _____

2. Do you owe any outstanding fees or final penalties to the Department? No ☒ Yes ☐
   If yes, please explain: _____

3. Is your company a corporation or limited liability company? No ☐ Yes ☒ If yes, attach a copy of your company's Certificate of Registration and/or Certificate of Good Standing from the Secretary of State.

Certification:

I certify, under provisions in Louisiana and United States law which provide criminal penalties for false statements, that based on information and belief formed after reasonable inquiry, the statements and information contained in this Addendum to the Permit Application, including all attachments thereto are true, accurate, and complete.

Responsible Official

Name Michael D. Harrelson	City Shreveport	State LA	Zip 71106
Title Co-Manager	Business phone (318) 286-6882		
Company Mt. Zion C & D, LLC	Signature of responsible official(s) Michael D. Harrelson		
Suite, mail drop, or division .	Date 1-27-07		
Street or P.O. Box 687 Mt. Zion Road			

Figures

Appendices

Introduction

Appendix A contains proof of public notice, the Secretary of State's certification, and proof of legal authority.

Appendix B references the zoning classification.

Part I – Solid Waste Standard Permit Application Louisiana Administrative Code (LAC) 33:VII.519

1. **Applicant (Permit Holder):** Mount Zion C & D, LLC
2. **Facility Name:** Mount Zion Road C & D Site
3. **Facility Location/Description:** 687 Mount Zion Road, Shreveport, Louisiana 71107
4. **Location:** **Section** 2 **Township** 16N **Range** 12W

   Parish Caddo Parish

   Coordinates: **Latitude -**

   Degrees 32 **Minutes** 24 **Seconds** 29.4

   Longitude -

   Degrees 93 **Minutes** 46 **Seconds** 18.5
5. **Mailing Address:** 1101 Russell Road

   Shreveport, Louisiana 71137
6. **Contact:** Michael D. Harrelson
7. **Telephone:** (318) 286-6882

8. **Type and Purpose of Operation: (check each applicable line)**

Type I	
Industrial Landfill	____
Industrial Surface Impoundment	____
Industrial Landfarm	____
Type I-A	
Industrial Incinerator Waste Handling Facility	____
Industrial Shredder/Compactor/Baler	____
Industrial Transfer Station	____
Type II	
Sanitary Landfill	____
Residential/Commercial Surface Impoundment	____
Residential Commercial Landfarm	____
Type II-A	
Residential/Commercial Incinerator Waste Handling Facility	____
Residential/Commercial Shredder/Compactor/Baler	____
Residential/Commercial Transfer Station	____
Residential/Commercial Refuse-Derived Fuel	____
Type III	
Construction/Demolition-Debris Landfill	X
Woodwaste Landfill	X
Compost Facility	____
Resource Recovery/Recycling Facility	____

Other – Describe: _____

9. **Site Status:** **Owned** X **Leased** _____ **Lease Term** _____ **Years**

(Note: If leased, provide copy of lease agreement)

10. **Operation Status:** **Existing** X **Proposed** _____

11. **Total Acres** 68.5 **Processing Acres** 10 **Disposal Acres** 40

12. **Environmental Permits: (list)**

Agency Interest # 52368 – LAR05M624 (May 24, 2006, LPDES Multi-Sector General Permit for Stormwater Discharges)

Agency Interest # 52368 – RI-13876 (May 11, 2006, Waste Tire Generator Number)

13. **Zoned:** **Yes** X **No** _____ **Zoning Requested** _____

Zone Classification: Legal, Non-Conforming Use

(Note: If zoned, include zoning affidavit and/or other documentation stating that the proposed use does not violate existing land-use requirements.)

14. **Types, Quantities, and Sources of Waste:**

	Processing		Disposal	
	On-Site	**Off-Site**	**On-Site**	**Off-Site**
Residential	NA	NA	NA	NA
Industrial	NA	NA	NA	NA
Commercial	NA	NA	NA	NA
Other*	1,000 tons per month	NA	850 wet tons per week*	50 tires per month

*Mt. Zion only receives construction debris, yard trash, and wood waste. Approximately 1,000 tons of wood chips are processed from an estimated 4,000 cubic yards of wood waste per month. Mt. Zion generates approximately 50 tires per month from the facility for off-site recycling.

15. **Service Area:**

List of Parishes:

Caddo Parish

Bossier Parish

Statewide _____ **Unlimited** _____

16. **Proof of Operator's Public Notice – Attach proof of publication of the notice regarding the permit submittal as required by LAC 33:VII.513.A.**

    See attached proof (Appendix A).

17. **Certification: I have personally examined and am familiar with the information submitted in the attached document, and I hereby certify under penalty of law that this information is true, accurate, and complete to the best of my knowledge. I am aware that there are significant penalties for submitting false information, including the possibility of fine and/or imprisonment.**

Signature: George H Cramer

Date: 8/12/08

Type Name and Title: George H. Cramer, Consultant

See attached proof of the legal authority of the signee to sign for the applicant, (Appendix A).

18. **Any additional information required by the Administrative Authority.**

§521 Part II – Supplementary Information LAC 33:VII.521 and LAC 33:VII.522 All Processing and Disposal Facilities

A. The Permit Application for solid waste processing and disposal facilities shall contain the information described in this section. All responses and exhibits shall be identified in the following sequence to facilitate the evaluation. Additionally, all applicable sections of LAC 33:VII.Chapter 7 and 8 shall be addressed and incorporated into the application responses. If a section does not apply, the applicant must state that it does not apply and explain why.

B. Location Characteristics Standards pertaining to location characteristics are contained in LAC 33:VII.709.A (Type I and II facilities), LAC 33:VII.717.A (Type I-A and II-A facilities), and LAC 33:719.A (Type III facilities). The following information on location characteristics is required for all facilities:

1. Area Master Plans

RESPONSE:

As shown on the site location map (Figure 1), the facility is located off Mt. Zion Road; approximately 0.5 mile from Linwood Avenue in Shreveport, Louisiana. A gravel-covered dirt road provides ingress and egress rights to the facility from Mt. Zion Road. The gravel-covered dirt access road is approximately 0.25 mile long, thus minimizing the potential for mud being tracked onto Mt. Zion Road (a city street). Mt. Zion Road is a lightly traveled road that connects Linwood Avenue to Kingston Road. Figure 2 presents the site plan, and Figure 3 presents generalize surface topographic contours.

2. Access Facilities

RESPONSE:

As shown on the site location map (Figure 1), the facility is located off Mt. Zion Road, approximately 0.5 mile from Linwood Avenue in Shreveport, Louisiana. The location meets the requirements of LAC 33:719.A.1 in terms of its accessibility.

3. A letter from the appropriate agency or agencies concerning the traffic flow for facilities receiving waste generated offsite.

RESPONSE:

A letter from the Shreveport Office of the City Traffic Engineer stating that the facility has no impact on the traffic flow on area roadways is included

as Appendix C.

4. The distance nearest the airport runway and proof of notification to the affected airport and the Federal Aviation Administration.

RESPONSE:

The nearest airport runway is approximately 12,000 feet northwest of the facility. The facility does not dispose of putrescible waste and, therefore, in accordance with LAC 33:VII.709.A.4, does not require proof of notification of an affected airport.

5. The Existing Land Use

RESPONSE:

The site location map (Figure 1) accurately locates the Mt. Zion Road C& D Site (Mt. Zion Road facility) and the surrounding area. Based on the interpretation of this site location map, the approximate land use may be classified as follows:

i.	*residential*	*50%*
ii.	*health-care facilities and schools*	*5%*
iii.	*agricultural*	*5%*
iv.	*industrial and manufacturing*	*5%*
v.	*other commercial*	*15%*
vi.	*recreational*	*5%*
vii.	*undeveloped*	*15%*

6. Aerial Photograph of the site.

RESPONSE:

An aerial photograph depicting the area within 1 mile of the site is included as Appendix D.

7. Environmental Characteristics of the site

RESPONSE:

Appendix E includes statements to indicate that this facility is not located within 1,000 feet of any known historical, wildlife, recreational, or other sensitive area. However, in a letter dated January 30, 2007, the U.S. Army Corps of Engineers (USACE) has indicated that a site storm

water drainage ditch may be considered "jurisdictional waters of the United States, including wetlands..." Appendix E provides a copy of the USACE 2007 letter and a copy of the 1994 letter from the same division indicating no jurisdictional waters or wetlands were located at the facility. Based on the potential for the drainage feature to be considered jurisdictional waters of the United States, no dredging or fill of the drainage feature will be conducted without the approval of the USACE.

Figure 4 represents the revised "Flood Plain" map issued in 2000 of the immediate area. The 2000 flood plain of Brushy Bayou has been extended from the 1984 flood plain presented in the original permit application. The 100-year flood plain elevation has been increased from the 1984 elevation of approximately 167 feet mean sea level (msl) to approximately 172 feet msl. The map shows the active portion of the facility to be outside the 100-year flood plain area published in 2000. However, historical operations may have occurred within the area previously considered outside the 100-year flood plain published in 1984 but now considered within the 100-year flood zone. This material will, if possible, be relocated within the active portion of the waste disposal area or capped in place.

8. A wetlands demonstration, if applicable, as provided in LAC 33:VII.709.A.8.

RESPONSE:

The active portion of the facility is not located in an area classified as a "wetland."

9. Demographic Information concerning the estimated population density within a 3-mile radius of the facility boundary, based on the latest census figures; and

RESPONSE:

The estimated population of the area within a 3-mile radius of the facility is approximately 12,101. This estimate was based on Louisiana State University's (LSU's) Census Information Center. LSU's neighborhood census profiles were reviewed and the population was determined based on the following neighborhoods: Pinecroft, Brookwood, Hyde Park, Southwood, Cargill Park, Suburban Acres, and Southern Hills. The census data were from the 2000 Census.

10. Information regarding wells, faults, seismic impact zones, unstable areas and utilities which is required for Type I and II facilities.

RESPONSE:

Not applicable. These requirements do not apply to Type III facilities.

C. Facility Characteristics Standards concerning facility characteristics are contained in LAC 33:VII.709.B (Type I and II facilities), LAC 33:VII.717.B (Type I-A and II-A facilities), and LAC 33:VII.719.B (Type III facilities). A facility plan, including drawings and a narrative, describing the information required below must be provided.

1. The following information is required for all facilities:

a. elements of the process or disposal system employed, including, as applicable, property lines, original contours (shown at not greater than 5-foot intervals), buildings, units of the facility, drainage, ditches and roads;

RESPONSE:

A facility plan is shown as Figure 2. There are no buildings at the facility. Other requirements are depicted on Figure 3 and the drawings in the Closure Plan (Appendix J).

b. the perimeter barrier and other control measures;

RESPONSE:

i. The facility is enclosed with a security fence that extends completely around the perimeter of the facility to prevent unauthorized entry. Access to the facility is restricted to the front entrance, located at the only access road to the facility;

ii. The gate is monitored by the facility operator during all hours of operation;

iii. The gate (and entry point) is locked during non-operating hours; and

iv. A sign is posted at the entrance gate which advises that only authorized entry is allowed. The sign identifies the facility and states that the facility receives only dry construction and demolition debris, yard trash, and wood waste and lists examples of the waste accepted (e.g., concrete, wood, limbs).

d. fire-protection and medical care measures;

RESPONSE:

Fire protection and emergency medical response is provided by the City of Shreveport through the 911 emergency response telephone number. The letters requesting confirmation in accordance with the regulation, along with the responses, are included in Appendix E. The nearest emergency medical facility is Willis Knighton Pierremont Hospital, 8001 Youree Drive, which is located approximately 5 miles from the facility. The nearest fire station is located on Mansfield Road, approximately 2.5 miles from the facility. Appendix H includes the Emergency Response Plan for the facility.

e. landscaping and other beautification efforts;

RESPONSE:

The facility is totally isolated from public view and is shielded from city streets and residential areas by a wooded buffer zone that is approximately 0.25 mile deep.

f. devices or methods to determine, record, and monitor incoming waste;

RESPONSE:

i. The facility supervisor and equipment operator are responsible for regulating all incoming waste. Each load of waste is recorded by generator (individual or company), source of waste, type of waste (concrete, wood, etc.), and approximate volume of waste. (NOTE: A manual system is used to estimate the volume of waste in cubic yards. The size of the delivery vehicle allows for an accurate estimate. A wet-weight conversion is made on the basis of 1,000 pounds per cubic yard.) The facility supervisor and the operators are knowledgeable of the types of waste that are allowed at the facility. Unauthorized wastes are rejected at a control point inside the landfill.

ii. The loads of waste received at the facility are recorded on a spreadsheet. Records are maintained at the Benton office location and can be made available for review upon request.

g. NPDES discharge points (existing and proposed); and

RESPONSE:

Because this facility accepts only yard trash, wood waste, and

construction and demolition debris, there should be no potential for the generation of contaminated storm water. The facility does have a Multi-Sector General Permit for Stormwater and sampling will be conducted in accordance with the permit. Storm water that accumulates at the site drains off the site via sheet flow and a system of interior site ditches. The permitted outfall into Brushy Bayou exits the site near the northwest corner of Carver Cemetery as shown on Figure 3.

h. other features, as appropriate.

RESPONSE:

None.

2. The following information is required for Type I and II facilities:

a. areas for isolating nonputrescible waste or incinerator ash, and borrow area, and

RESPONSE:

Not applicable. This is a Type III facility.

b. location of leachate collection/treatment/removal system.

RESPONSE:

Not applicable. This is a Type III facility.

D. Facility Surface Hydrology. Standards governing facility surface hydrology are contained in LAC 33:VII.711.A (Type I and II landfills), LAC 33:VII.713.A (Type I and II surface impoundments), LAC 33:VII.715.A (Type I and II landfarms), LAC 33:VII.717.C (Type I-A and II-A facilities), and LAC 33:VII.719.C (Type III facilities), and LAC33.VII.723.B (composing facilities). The following information is required for all facilities:

1. a description of the method to be used to prevent surface drainage through the operating areas of the facility;

RESPONSE:

A system of perimeter berms has been provided for surface runoff diversion (Figure 3). The perimeter berm system is designed to prevent surface runoff from adjacent properties through the site. An internal ditch system helps convey site storm water to Brushy Bayou. At closure, a perimeter ditch system will be constructed to manage storm water at the site. (NOTE: The site

includes an area within the 100-year flood plain, but no current facility operations take place in the flood plain [Figure 4]).

2. a description of the facility runoff/run-on collection system;

RESPONSE:

A system of perimeter berms has been designed to prevent surface runoff from entering operating units of the facility during a storm event. Perimeter berms are approximately 2 feet higher than the natural ground. A site ditch system has been designed to convey a 25-year discharge from the facility to Brushy Bayou.

3. the rainfall from a 24-hour/25-year storm event;

RESPONSE:

The maximum rainfall in a 24-hour/25-year storm event for Region III is 7.4 inches. The design of the berms and ditch system ensures that off-site surface runoff will be prevented from flowing through the fill area (Figure 2).

4. the location of aquifer recharge areas in the site or within 1,000 feet of the site perimeter, along with a description of the measures planned to protect those areas from the adverse impact of operations at the facility; and

RESPONSE:

The facility is located in an area that has "low recharge potential" (Figure 5).

5. if the facility is located in a flood plain, a plan to ensure that the facility does not restrict the flow of the 100-year base flood or significantly reduce the temporary water-storage capacity of the flood plain, and documentation indicating that the design of the facility is such that the flooding does not affect the integrity of the facility or result in the washout of solid waste.

RESPONSE:

No disposal will take place in the flood plain (Figure 4).

E. Facility Plans and Specifications. Standards governing facility plans and specifications are contained in LAC 33:VII.711.B (Type I and II landfills), LAC 33:VII.713.B (Type I and II surface impoundments), LAC 33:VII.715.B (Type I and II landfarms), LAC 33:717.E (Type I-A and II-A facilities), LAC 33:VII.721.A (Type III construction and demolition debris and woodwaste landfills), LAC 33:VII.723.A (composting facilities), and LAC 33:VII.725.A (Type III separation and woodwaste processing facilities).

1. Certification. The person who prepared the permit application shall provide the following certification: "I certify under penalty of law that I have personally examined and I am familiar with the information submitted in this permit application and that the facility as described in this permit application meets the requirements of LAC 33:VII.Subpart 1. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment."

RESPONSE:

A signed Certification Statement is provided as Appendix G.

2. Geotechnical field tests and laboratory tests shall be conducted according to the standards of the American Society for Testing and Materials (ASTM) or the EPA or other applicable standards approved by the administrative authority. The results of these tests may be used for modeling and analysis purposes.

RESPONSE:

The Geotechnical Investigation of the site indicates that the soils consist of very fine-grained sand, silts, and clay. There is no gravel or coarse sand associated with the soil samples taken to a depth of up to 25 feet at this facility. Additionally, no liquid wastes will be accepted for disposal at this facility which should negate the possibility of having an environmentally adverse surface spill. Soil descriptions are provided in Appendix F.

3. The following information on plans and specifications is required for Type I and II facilities:

a. detailed plan-view drawings showing original contours, proposed elevations of the base of units prior to installation of the liner system, and proposed final contours (e.g., maximum height);

RESPONSE:

Not applicable. This is a Type III facility.

b. detailed drawings of slopes, levees, and other pertinent features;

RESPONSE:

Not applicable. This is a Type III facility.

c. the type of material and its source for levee construction. Calculations shall be performed to indicate the volume of material required for levee construction;

RESPONSE:

Not applicable. This is a Type III facility.

d. representative cross sections showing original and final grades, drainage, the location and type of liner, and other pertinent information;

RESPONSE:

Not applicable. This is a Type III facility.

e. a description of the liner system, which shall include calculations of anticipated leachate volumes, rationales for particular designs of such systems, and drawings; and

RESPONSE:

Not applicable. This is a Type III facility.

f. a description of the leachate collection and removal system, which shall include calculations of anticipated leachate volumes, rationales for particular designs of such systems, and drawings.

RESPONSE:

Not applicable. This is a Type III facility.

4. The following information is required for Type I, II and III landfills:

a. approximate dimensions of daily fill and cover; and

RESPONSE:

Interim cover is placed on the active face of the landfill at least every 30 days. The active face is approximately 1 acre.

b. the type of cover material and its source for daily, interim, and final cover. Calculations shall be performed to indicate the volume of material required for daily, interim, and final cover.

RESPONSE:

Interim and fixed cover will be a clay-rich soil taken from soils brought to the site for disposal and/or provided by HMM per the agreement letter included in Appendix J. Interim cover volume is about 1,600 cubic yards (43,000'X1') in place. Final cover, assuming it is applied when 5 acres have reached final grade, is about 16,926 cubic yards (215,000'X2') in place.

5. Type I and II landfills and surface impoundments with a potential to produce gases shall provide a gas collection/treatment or removal system.

RESPONSE:

Not applicable. This is a Type III facility.

F. Facility Administrative Procedures. Standards governing facility administrative procedures are contained in LAC 33:VII.711.C (Type I and II landfills), LAC 33:VII.713.C (Type I and II surface impoundments), LAC 33:VII.715.C (Type I and II landfarms), LAC 33:VII.717.F (Type I-A and II-A facilities), LAC 33:VII.721.B (Type III construction and demolition debris and woodwaste landfills), LAC 33:VII.723.C (composting facilities), and LAC 33:VII.725.B (Type III separation and woodwaste processing facilities).

1. The following information on administrative procedures is required for all facilities:

a. a description of the recordkeeping system, including types of records to be kept, and the use of records by management to control operations as required;

RESPONSE:

Mt. Zion Road facility's supervisors and operators will maintain records of each load of waste deposited at the facility. Weight in wet-tons shall be calculated by using a multiplier to convert waste volumes to weight. This information is recorded on a spreadsheet. Copies of these spreadsheets will be maintained on file at the Benton address of Mt. Zion C & D, LLC (1101 Longkey Circle, Benton, LA 71006). The Annual Report will be prepared based on these records.

Records for the Mt. Zion Road facility shall be maintained on file at the main office located at the Benton address. The records shall be maintained for the life of the facility plus three years in accordance with the applicable regulations.

The on-site operators of the Mt. Zion Road facility will ensure that only

authorized wastes are disposed of at this facility. Records of waste disposed at this facility, which includes the generator and transporter of the waste, will be maintained at the main office located in Benton.

All required operational records including copies of the current Louisiana Solid Waste Regulations, as well as a copy of the permit, the permit application, and all permit modifications, shall be maintained on file at the main office located in Benton.

b. an estimate of the minimum personnel, listed by general job classification, required to operate the facility;

RESPONSE:

The facility will be operated by Mt. Zion C & D, LLC, personnel including a facility supervisor and equipment operator. The supervisor will be responsible for monitoring and recording incoming wastes. The equipment operator is responsible for maintaining proper cover and maintenance of the facility. Additional management personnel are located at the main office in Benton.

c. maximum days of operation per week and per facility operating day (maximum hours of operation within a 24-hour period).

RESPONSE:

Normal operating hours are from 7:30 a.m. to 5 p.m., 9.5 hours per day, six days per week. The gate at the entrance to the facility will be locked to eliminate access to the facility during non-operating hours.

d. an annual report submitted to the administrative authority.

RESPONSE:

The Annual Report will be compiled and submitted on the required form no later than August 1 of each reporting year. The reporting period will be from July 1 through June 30 of the reporting year in accordance with the regulations.

2. Type II and Type III facilities shall include the number of certified facility operators determined and certified by the Louisiana Solid Waste Operator Certification and Training Program Board (R.S. 37:3151 et seq. and LAC 46:Part XXIII).

RESPONSE:

One Class B certified equipment operator is on site every day during

operating hours. Two Class A operators provide supervision and oversight but are not on site every day. An additional Class A operator and Class B operator are available, if needed, at the HMM Landfill.

G. Facility Operational Plans. Standards governing facility operational plans are contained in LAC 33:VII.711.D (Type I and II landfills), LAC 33:VII.713.D (Type I and II surface impoundments), LAC 33:VII.715.D (Type I and II landfarms), LAC 33:VII.717.G (Type I-A and II-A facilities), LAC 33:VII.721.C (Type III construction and demolition debris and woodwaste landfills), LAC 33:VII.723.D (composting facilities), and LAC 33:VII.725.C (Type III separation and woodwaste processing facilities)..

1. The following information on operational plans is required for all facilities:

a. types of waste (including chemical, physical, and biological characteristics of industrial wastes generated on-site), maximum quantities of wastes per year, and sources of waste to be processed or disposed of at the facility;

RESPONSE:

This facility will allow only construction and demolition debris, wood wastes, and yard waste as defined in LAC 33.VII.115 to be received. It is estimated that the total waste received per year will be approximately 850 wet tons per week or an estimated 45,000 wet tons per year. The waste will be approximately 95 percent from construction or landscaping contractors and 5 percent from individual residents.

b. waste-handling procedures from entry to final disposition, which could include shipment of recovered materials to a user;

RESPONSE:

The supervisor of the facility is responsible for managing all wastes being received at the facility. The control point is located inside the landfill, prior to the active cell. At that point, the supervisor inspects the load and completes the information required on the Record of Incoming Waste spreadsheet. The load is then directed to the appropriate cell for the material to be deposited. The equipment operator will monitor the deposition of the waste into the landfill. The vehicle will be directed to exit the facility. The material will be covered at least every 30 days. No waste material will leave the facility once it has been received and recorded, except that periodically, waste tires not observed during the inspection will be shipped off site for recycling in accordance with the waste tire generator's permit.

c. minimum equipment to be furnished at the facility;

RESPONSE:

The facility will keep a minimum of a compactor, trackhoe, and bulldozer at the facility at all times to maintain proper drainage, cover, and access to the facility. The operator will ensure the facility is properly maintained according to the permit requirements. Other equipment, including two more trackhoes, another compactor, another bulldozer, and two front-end loaders, are available at HMM Landfill, in addition to other equipment available through the co-owner's construction company.

d. plan to segregate wastes, if applicable;

RESPONSE:

Tree wood waste is segregated from the other types of construction debris and chipped for beneficial reuse. Segregation of unacceptable wastes is accomplished prior to compaction. This waste is placed into one of two 8-cubic-yard covered roll-off bins and sent to a permitted landfill every week. The facility will maintain a log documenting the volumes of waste removed from the site. Generators are observed during dumping to ensure that unacceptable wastes are not placed into the landfill. Mt. Zion also has a waste tire generator number to handle the occasional tire that is discovered at the facility. Waste tires are segregated and transported, by a licensed transporter, to an off-site recycler when 50 tires or more are present. Segregation of other unacceptable waste will be conducted in accordance with the regulations. If found, putrescible waste, liquid waste, infectious waste, industrial waste, commercial waste, Regulated Asbestos-Containing Material (RACM), or residential waste will be segregated and removed at least every 7 days.

e. procedures planned in case of breakdowns, inclement weather, and other abnormal conditions (including detailed plans for wet-weather access and operations);

RESPONSE:

Upon receipt of the waste at the control point, the waste is directed to the open cell. A working road is maintained from the control point to the working cell at all times. The working face of the disposal area shall be kept as small as practical. Only one cell will be open at a time. The waste is dumped from its truck/trailer into the working cell for disposal.

In wet weather, vehicles are required to stay on the prepared road. The roads are maintained so that operations can continue in most rain or wet weather conditions. If roads are determined to be unserviceable, the facility will be closed until safe accessibility can be attained. Because this is a small facility, operated by one to two people, limited capability is available for road maintenance during rainy conditions.

f. procedures, equipment, and contingency plans for protecting employees and the general public from accidents, fires, explosions, etc., and provisions for emergency response and care should an accident occur (including proximity to a hospital, fire and emergency services, and training programs); and

RESPONSE:

An Emergency Response Plan & Training Program is presented in Appendix H. The inclusion of this plan in this permit application satisfies the requirement for submittal to the Administrative Authority. In addition, a copy of the Emergency Response Plan & Training Program will be submitted to the Knighton Pierremont Hospital.

g. provisions for controlling vectors, dust, litter, and odors.

RESPONSE:

The active area shall be kept as small as practical and the wastes shall be covered as required to prevent insect, rodent, and animal attraction. Cover material will be used as required to reduce odors, minimize blowing litter, allow accessibility, and improve aesthetic appearance. Cover shall consist of a layer of 12-inch thick (minimum) soil. The cover material to be used is primarily soil material received for disposal from off-site sources. Dust from the access road or cover material that is generated in drier weather is controlled by means of light films of water.

2. The following information is required for Type I, I-A, II, II-A, and III facilities.

a. a comprehensive operational plan describing the total operation, including but not limited to, inspection of incoming waste to ensure that only permitted wastes are accepted (Type II landfills shall provide a plan for random inspection of incoming waste loads to ensure that hazardous wastes or Toxic Substances Control Act (TSCA) regulated PCB wastes are not disposed of in the facility.); traffic control; support facilities; equipment operation; personnel involvement; and day-to-day activities. A quality-assurance/quality-control (QA/QC) plan shall be provided for facilities receiving industrial waste; domestic-sewage sludge; incinerator ash; asbestos-containing waste; nonhazardous petroleum-contaminated media; and debris generated from underground

storage tanks (UST), corrective action, or other special wastes as determined by the administrative authority. The QA/QC plan shall include, but shall not be limited to, the necessary methodologies; analytical personnel; preacceptance and delivery restrictions; handling procedures; and appropriate responsibilities of the generator, transporter, processor, and disposer. The QA/QC plan shall ensure that only permitted, nonhazardous wastes are accepted;

RESPONSE:

The supervisor of the facility is responsible for managing all wastes being received at the facility. The control point is located inside the landfill, prior to the active cell. At that point, the supervisor inspects the load and completes the information required on the Record of Incoming Waste spreadsheet. The load is then directed to the appropriate cell for the material to be deposited. The equipment operator will monitor the deposition of the waste into the landfill. The vehicle will be directed to exit the facility. The material will be covered at least every 30 days. No waste material will leave the facility once it has been received and recorded, except that periodically waste tires not observed during the inspection will be shipped off site for recycling in accordance with the waste tire generator's permit.

The facility will keep a minimum of a compactor, trackhoe, and bulldozer at the facility at all times to maintain proper drainage, cover, and access to the facility. The operator will ensure the facility is properly maintained according to the permit requirements. Other equipment, including two more trackhoes, another compactor, another bulldozer, and two front-end loaders, are available at HMM Landfill, in addition to other equipment available through the co-owner's construction company.

Upon receipt of the waste at the control point, the waste is directed to the open cell. A working road is maintained from the control point to the working cell at all times. The working face of the disposal area shall be kept as small as practical. Only one cell will be open at a time. The waste is dumped from its truck/trailer into the working cell for disposal.

In wet weather, vehicles are required to stay on the prepared road. The roads are maintained so that operations can continue in most rain or wet weather conditions. If roads are determined to be unserviceable, the facility will be closed until safe accessibility can be attained. Because this is a small facility, operated by one to two people, limited capability is available for road maintenance during rainy conditions.

Putrescible waste, liquid waste, infectious waste, industrial waste, commercial waste, RACM, and residential waste are not allowed at the Mt. Zion landfill. If these items are observed at the control point, the supervisor orders the vehicle to exit the landfill and fills out a rejection report including date, time, vehicle number, vehicle license number, and the type of rejected waste. If the unacceptable material is observed at the active face of the landfill, it is segregated, placed into closed-top containers, and removed from the facility to a facility permitted to accept that waste within 7 days.

If unacceptable liquid wastes are spilled at the facility before they are removed through the process described above, the equipment operator will block the flow of the liquid wastes with the on-site equipment and contain them in as small an area as possible. Clean cover material will be mixed with the liquids to absorb them, and the entire volume plus underlying soil will be excavated and placed into a separate, covered container for subsequent testing, for appropriate parameters, and disposal at a proper disposal site.

b. salvaging procedures and control, if applicable;

RESPONSE:

Salvaging is not permitted at the facility. The facility prevents salvaging by a site enclosure with a security fence that extends completely around the perimeter of the facility to prevent unauthorized entry, restricting access to the facility through a front entrance gate, located at the only access road to the facility. The gate is monitored by the facility operator during all hours of operation. The gate (and entry point) is locked during non-operating hours.

c. scavenging control; and

RESPONSE:

Scavenging is not permitted at the facility. The facility prevents scavenging by a site enclosure with a security fence that extends completely around the perimeter of the facility to prevent unauthorized entry, restricting access to the facility through a front entrance gate, located at the only access road to the facility. The gate is monitored by the facility operator during all hours of operation. The gate (and entry point) is locked during non-operating hours.

d. a comprehensive air monitoring plan for facilities receiving waste with a potential to produce methane gases.

RESPONSE:

The material accepted at this C&D facility does not have a potential to produce methane gas.

3. The following information is required for Type I and II landfarms.

a. Items to be submitted, regardless of land use, include:

i. a detailed analysis of waste, including but not limited to, pH, phosphorus, nitrogen, potassium, sodium, calcium, magnesium, sodium-adsorption ratio, and total metals (as listed in LAC 33:VII.715.D.3.b);

RESPONSE:

Not applicable. This is a Type III facility.

ii. soil classification, cation-exchange capacity, organic matter, content in soil, soil pH, nitrogen, phosphorus, metals (as listed in LAC 33:VII.715.D.3.b), salts, sodium, calcium, magnesium, sodium-adsorption ratio, and PCB concentrations of the treatment zone; and

RESPONSE:

Not applicable. This is a Type III facility.

iii. annual application rate (dry tons per acre) and weekly hydraulic loading (inches per acre).

RESPONSE:

Not applicable. This is a Type III facility.

b. Items to be submitted in order for landfarms to be used for food-chain cropland include.

i. a description of the pathogen-reduction method for septage, domestic sewage sludges, and other sludges subject to pathogen production;

RESPONSE:

Not applicable. This is a Type III facility.

ii. crops to be grown and the dates for planting;

RESPONSE:
Not applicable. This is a Type III facility.

iii. PCB concentrations in waste;

RESPONSE:
Not applicable. This is a Type III facility.

iv. annual application rates of cadmium and PCBs; and

RESPONSE:
Not applicable. This is a Type III facility.

v. cumulative applications of cadmium and PCBs.

RESPONSE:
Not applicable. This is a Type III facility.

c. Items to be submitted for landfarms to be used for non-food-chain purposes include.

RESPONSE:
Not applicable. This is a Type III facility.

i. a description of the pathogen-reduction method in septage, domestic sewage sludges, and other sludges subject to pathogen production; and

RESPONSE:
Not applicable. This is a Type III facility.

ii. a description of control of public and livestock access.

RESPONSE:
Not applicable. This is a Type III facility.

4. The following information is required for Type I-A and II-A incinerator waste-handling facilities and refuse-derived energy facilities:

RESPONSE:
Not applicable. This is a Type III facility.

a. a description of the method used to handle process waters and other water discharges that are subject to NPDES/LPDES permit and state water discharge permit requirements and regulations; and

RESPONSE:

Not applicable. This is a Type III facility.

b. a plan for the disposal and periodic testing of ash (All ash and residue shall be disposed of in a permitted facility).

RESPONSE:

Not applicable. This is a Type III facility.

5. The following information is required for Type I-A and II-A refuse-derived fuel facilities and Type III separation and composting facilities:

a. a description of the testing to be performed on the fuel or compost; and

RESPONSE:

Not applicable. This is a Type III construction/demolition landfill.

b. a description of the uses for and the types of fuel/compost to be produced.

RESPONSE:

Not applicable. This is a Type III construction/demolition landfill.

6. Type I-A and II-A refuse-derived fuel facilities and Type III separation and composting facilities shall include a description of marketing procedures and control.

RESPONSE:

Not applicable. This is a Type III construction/demolition landfill.

H. Implementation Plans. All facilities shall have implementation plans in accordance with standards in LAC 33:VII.709.D (Type I and II facilities), LAC 33:VII.717.H (Type I-A and II-A facilities), and LAC 33:VII.719.E (Type III facilities).

RESPONSE:

The Mt. Zion Road facility Implementation Plan is provided as Appendix I.

I. Facility Closure Standards governing facility closure are contained in LAC 33:VII.711.E (Type I and II landfills), LAC 33:VII.713.E (Type I and II surface impoundments), LAC 33:VII.715.E (Type I and II landfarms), LAC 33:VII.717.I (Type I-A and II-A facilities), LAC 33:VII.721.D (Type III construction and demolition debris and woodwaste landfills), LAC 33:VII.723.E (composting facilities), and LAC 33:VII.725.D (Type III separation and woodwaste processing facilities).

1. The Closure Plan for all facilities must include the following:

a. the date of final closure;

RESPONSE:

The Mt. Zion Road facility Closure and Post-Closure Plan is presented in Appendix J. Included in the Closure Plan are the conceptual engineering drawings depicting the final design for the facility. The estimated date of final closure is December 31, 2056.

b. the method to be used and steps necessary for closing the facility; and

RESPONSE:

The Mt. Zion Road facility Closure and Post-Closure Plan is presented in Appendix J.

c. an itemized cost of closure of the facility, based on the estimated cost of hiring a third party to close the facility at the point in the facility's operating life when the extent and manner of its operation would make closure the most expensive.

RESPONSE:

The Mt. Zion Road facility Closure Cost Estimate is presented in Appendix K.

2. The Closure Plan for Type I and II landfills and surface impoundments shall include:

a. a description of the final cover and the methods and procedures used to install the cover;

RESPONSE:

Not applicable. This is a Type III facility.

b. an estimate of the largest area of the facility ever requiring a final cover at any time during the active life;

RESPONSE:

Not applicable. This is a Type III facility.

c. an estimate of the maximum inventory of solid waste ever on-site over the active life of the facility; and

RESPONSE:

Not applicable. This is a Type III facility.

d. a schedule for completing all activities necessary for closure.

RESPONSE:

Not applicable. This is a Type III facility.

3. The Closure Plan for all Type I and II facilities and Type III woodwaste and construction/demolition debris facilities shall include the following:

a. the sequence of final closure of each unit of the facility, as applicable;

RESPONSE:

The sequence of final closure for the Mt. Zion Road facility is included in the Closure and Post-Closure Plan is presented in Appendix J.

b. a drawing showing final contours of the facility; and

RESPONSE:

The drawing is included in the Closure and Post-Closure Plan and is presented in Appendix J.

c. a copy of the document that will be filed upon closure of the facility with the official parish record keeper indicating the location and use of the property for solid waste disposal, unless the Closure Plan specifies a clean closure.

RESPONSE:

The document is included in the Closure and Post-Closure Plan and is presented in Appendix J.

J. Facility Post-Closure. Standards governing post-closure requirements are contained in LAC 33:VII.711.F (Type I and II landfills), LAC 33:VII.713.F (Type I and II surface impoundments), LAC 33:VII.715.F (Type I and II landfarms), and LAC 33:VII.721.E (Type III construction and demolition debris and woodwaste landfills).

1. The Post-Closure Plan for all facilities shall include the following:

a. a discussion of the long-term use of the facility after closure, as anticipated; and

RESPONSE:

At this time, the long-term use of this facility is not known. The site will probably remain as a grassed area with limited use for storage of equipment. The site will be maintained in post-closure status for a minimum of 3 years and, if required by the Administrative Authority, this time may be extended. During the post-closure period, the cap and grade will be maintained. Each year during the post-closure period, annual reports will be filed with the Administrative Authority reporting on the integrity of the cap and site in general.

b. an itemized cost of conducting post-closure of the facility, based on the estimated cost of hiring a third party to conduct post-closure activities in accordance with the closure plan.

RESPONSE:

The cost for maintaining the grade and cap of the facility and preparing the annual reports concerning the integrity of the cap for the 3 years of post-closure maintenance is itemized in Appendix K, Post-Closure Cost Estimate.

2. The Post-Closure Plan for Type I and II facilities must include the following:

a. the method for conducting post-closure activities, including a description of the monitoring and maintenance activities and the frequency at which they will be performed;

RESPONSE:

Not applicable. This facility is a Type III facility.

b. the method for abandonment of monitoring systems, leachate collection systems, gas-collection systems, etc.;

RESPONSE:

Not applicable. This facility is a Type III facility.

c. measures planned to ensure public safety, including access control and gas control; and

RESPONSE:

Not applicable. This facility is a Type III facility.

d. a description of the planned uses of the facility during the post-closure period.

RESPONSE:

Not applicable. This facility is a Type III facility.

K. Financial Responsibility. Standards governing financial responsibility are contained in LAC 33:VII.Chapter 13. All applicable Sections of LAC 33:VII.Chapter 13 must be addressed and incorporated into the permit application responses. A section documenting financial responsibility according to LAC 33:VII.Chapter 13 that contains the following information shall be included for all facilities:

1. the name and address of the person who currently owns the land and the name and address of the person who will own the land if the standard permit is granted (if different from the permit holder, provide a copy of the lease or document which evidences the permit holder's authority to occupy the property); or

RESPONSE:

Mt. Zion C & D, LLC
687 Mount Zion Road
Shreveport, Louisiana 71107

2. the name of the agency or other public body that is requesting the standard permit; or, if the agency is a public corporation, its published annual report; or, if otherwise, the names of the principal owners, stockholders, general partners, or officers;

RESPONSE:

Michael D. Harrelson and David Strong, Co-Managers.

3. evidence of liability coverage, including:

a. personal injury, employees, and the public (coverage, carriers, and any exclusions or limitations);

RESPONSE:

Appendix L contains the documentation to verify the appropriate liability insurance including a "Solid Waste Facility Certificate of Liability Insurance." Also included is a copy of a Solid Waste Facility Trust Agreement between Mt. Zion C & D, LLC, and Trust One Bank of Tennessee.

b. property damage (coverage and carrier);

RESPONSE:

Appendix L contains the documentation to verify the appropriate liability insurance including a "Solid Waste Facility Certificate of Liability Insurance." Also included is a copy of a Solid Waste Facility Trust Agreement between Mt. Zion C & D, LLC, and Trust One Bank of Tennessee.

c. environmental risks; and

RESPONSE:

Appendix L contains the documentation to verify the appropriate liability insurance including a "Solid Waste Facility Certificate of Liability Insurance." Also included is a copy of a Solid Waste Facility Trust Agreement between Mt. Zion C & D, LLC, and Trust One Bank of Tennessee.

4. evidence of a financial assurance mechanism for closure and/or post-closure care and corrective action for known releases when needed.

RESPONSE:

Appendix L contains the documentation to verify the appropriate liability insurance including a "Solid Waste Facility Certificate of Liability Insurance." Also included is a copy of a Solid Waste Facility Trust Agreement between Mt. Zion C & D, LLC, and Trust One Bank of Tennessee.

L. Solid Waste Fees. Standards governing solid waste fees are contained in LAC 33:VII.Chapter 15. A section documenting compliance with applicable fees according to LAC 33:VII.Chapter 15 shall be included for all facilities

RESPONSE:

Mt. Zion C&D, LLC complies with applicable fees according to LAC33:VI Chapter 15. Records indicate that the facility paid $1,089 in the preceding year.

M. Special Requirements. The Administrative Authority may require additional information for special processes or systems and for supplementary environmental analysis.

RESPONSE:

Mt. Zion C & D, LLC, acknowledges this requirement.

N. General Facility Geology. Standards governing facility geology are contained in LAC 33:VII.801. The following information is required for Type I, Type I-A, Type II, Type II-A, and Type III facilities:

1. a demonstration that the person who characterized the subsurface soil and groundwater conditions at the facility is qualified. At a minimum, this individual shall be a geologist, or a professional engineer licensed in the state of Louisiana with expertise in geotechnical engineering and hydrogeology; and

RESPONSE:

Groundwater was not encountered beneath the site. The geotechnical investigation was performed by Bobby Raines, a geologist for ALTEC Environmental Consultants in Shreveport. Because this was performed in 1994, Mt. Zion C&D LLC has no current information on Mr. Raines. However, the work was reviewed by Mr. George Cramer who is a licensed Professional Geologist specializing in hydrogeology, who is registered in four states, and who prepared the cross section in Appendix F.

2. a demonstration that the facility has natural soils of low permeability as provided in LAC 33:VII.801.A.2; or

RESPONSE:

The geotechnical investigation in Appendix F demonstrates that the natural soils are not of low permeability.

3. a design for surfacing natural soils that do not meet the low permeability standard as provided in LAC 33:VII.801.A.3.

RESPONSE:

Due to the geotechnical investigation in 1994, the previous owner placed 1 to 3 feet of low permeability clay across the entire site, as shown in the boring logs from August 2005 (Appendix F). The clay had a plasticity index (PI) of approximately 15 and permeability of $1X10^{-7}$ centimeters per second.

O. Subsurface Characterization. Standards governing subsurface characterization are contained in LAC 33:VII.803.

1. Type I, II, and III facilities shall demonstrate that the facility meets the boring requirements provided in LAC 33:VII.803.A.

RESPONSE:

The geotechnical investigation of 1994 as supplemented by the additional borings in 2005 (Appendix F) meet the requirements of LAC 33:VII.803.A except that current elevations are depicted on Drawing Number 4 in Appendix J. Elevations prior to the placement of the clay liner were not previously required and, therefore, are not available.

2. Type I and II facilities shall demonstrate that:

a. the facility meets the piezometer or monitoring well requirements as provided in LAC 33:VII.803.B; and

b. the facility meets the geology and groundwater flow characterization requirements provided in LAC 33:VII.803.C.

RESPONSE:

Not applicable. This is a Type III facility.

P. Facility Groundwater Monitoring. Standards governing facility groundwater monitoring are contained in LAC 33:VII.805. The following information is required for Type I and II facilities:

1. a designation of each zone that will be monitored;

RESPONSE:

Not applicable. This is a Type III facility.

2. a map for each groundwater monitoring zone that depicts the locations of all monitoring wells (including proposed monitoring wells) that are screened in a particular zone and each zone's relevant point of compliance, along with information that demonstrates that monitoring wells meet the standards in LAC 33:VII.805.A.1 and 2. For proposed monitoring wells, the response to this requirement shall provide an implementation schedule for submitting a revised well location map showing all existing and proposed monitoring wells that are screened in each particular zone;

RESPONSE:

Not applicable. This is a Type III facility.

3. a geologic cross section along the perimeter of the facility showing screen intervals for existing and proposed monitoring wells, along with other applicable information required in LAC 33:VII.803.C.2.a. For proposed monitoring wells, the response to this requirement shall include an implementation schedule for revising applicable geologic cross sections to include the screen interval of the newly installed monitoring wells and other applicable information required in LAC 33:VII.803.C.2.a;

RESPONSE:

Not applicable. This is a Type III facility.

4. a designation of each monitoring well (including any proposed monitoring wells) as either "background" or "down gradient," for each zone that will be monitored;

RESPONSE:

Not applicable. This is a Type III facility.

5. a table displaying pertinent well construction details for each monitoring well, including the elevation of the reference point for measuring water levels to the National Geodetic Vertical Datum (NGVD), the elevation of the ground surface (NGVD), the drilled depth (in feet), the depth to which the well is cased (in feet), the depth to the top and bottom of the bentonite seal (in feet), the depth to the top and bottom of the screen (in feet), the slot size, the casing size, and the type of grout; and as-built diagrams (cross sections) of each well providing the aforementioned well construction details. For proposed monitoring wells, the response to this requirement shall provide an implementation schedule for submitting the information specified in this requirement;

RESPONSE:

Not applicable. This is a Type III facility.

6. a demonstration that the monitoring wells are constructed according to the standards in LAC 33:VII.805.A.3. For proposed monitoring wells, the response to this requirement shall provide an implementation schedule for submitting the information specified in this requirement;

RESPONSE:

Not applicable. This is a Type III facility.

7. for an existing facility, all background data and at least three years of detection monitoring data from monitoring wells in place at the time of the permit

application. If this data exists in the department records, the administrative authority may allow references to the data in the permit application. For an existing facility with no wells, groundwater data shall be submitted within 90 days after the installation of monitoring wells. For a new facility or expansion, groundwater data (one sampling event) shall be submitted before waste is accepted;

RESPONSE:

Not applicable. This is a Type III facility.

8. a sampling and analysis plan that meets the standards in LAC 33:VII.805.B and includes a table that specifies each parameter, analytical method, practical quantitation limit, and Chemical Abstracts Service registry number (CAS RN); and

RESPONSE:

Not applicable. This is a Type III facility.

9. a plan for detecting, reporting, and verifying changes in groundwater.

RESPONSE:

Not applicable. This is a Type III facility.

§523. Part III: Additional Supplemental Information

A. The following supplementary information is required for all solid waste processing and disposal facilities. All responses and exhibits must be identified in the following sequence to facilitate the evaluation:

1. a discussion demonstrating that the potential and real adverse environmental effects of the facility have been avoided to the maximum extent possible;

RESPONSE:

The site is located in a former borrow pit in south-central Shreveport. Local ordinances anticipate that these pits will be filled up to prevent adverse environmental and human impacts. The type of material being used to fill this borrow pit (construction/demolition debris and wood waste) avoids any potential or real environmental impacts to the maximum extent possible. Storm water is diverted around the working areas of the facility before exiting the site. The facility has a Multi-Sector General Permit for Stormwater that falls within the facility and sampling will be done in accordance with the requirements of this permit. Air impacts are not anticipated because the type of waste being received is not volatile, nor does it produce landfill gas. Putrescible waste is not allowed, preventing the release of odors and the percolation of any adverse impacts downward to the shallow groundwater. Based on available geotechnical borings, a clay layer is present beneath the site. Due to the location of the clay layer near the surface, no significant excavation of native material is proposed at this time. Aesthetically, the site is not intrusive, being shielded from public view by distance and elevation or located behind a thick tree buffer in most areas.

2. a cost-benefit analysis demonstrating that the social and economic benefits of the facility outweigh the environmental-impact cost.

RESPONSE:

As discussed above, the environmental impacts, if any, are minimal, while the benefits of this construction and demolition debris landfill are significant. From a safety standpoint, the benefit to the community by having the borrow pit filled in with benign material is highly significant. This will also provide an opportunity for future redevelopment of a site that in its pre-landfill state was not an asset to the community. The landfill provides positive primary and secondary spending impacts for the

community though wages, operating expenses, and taxes. The landfill provides competition in the Shreveport area for the disposal of construction and demolition debris waste which provides an economic benefit to the community through lower costs for the disposal of these types of waste. When the social and economic benefits of the facility are weighed against the environmental-impact costs, if any, the benefits clearly outweigh the potential costs.

3. a discussion and description of possible alternative projects which would offer more protection to the environment without unduly curtailing non-environmental benefits.

RESPONSE:

There are no alternative projects that would offer more protection to the environment without unduly curtailing non-environmental benefits. The no action alternative (closing the landfill) would curtail the non-environmental benefits of eliminating a potential safety hazard by filling in the borrow pit and creating a site that has a high potential for reuse after closure. Other technologies could be used, such as an air curtain destructor for the wood waste, but siting such a unit in close proximity to residential areas has not been considered favorably in the past. Currently Mt. Zion C & D is chipping approximately 4,000 cubic yards of wood waste each month for off-site use as an alternate energy source. This reduces the volume of material that requires landfill disposal and the potential for subterranean fires associated with the wood waste.

4. a discussion of possible alternative sites that would offer more protection to the environment without unduly curtailing non-environmental benefits; and

RESPONSE:

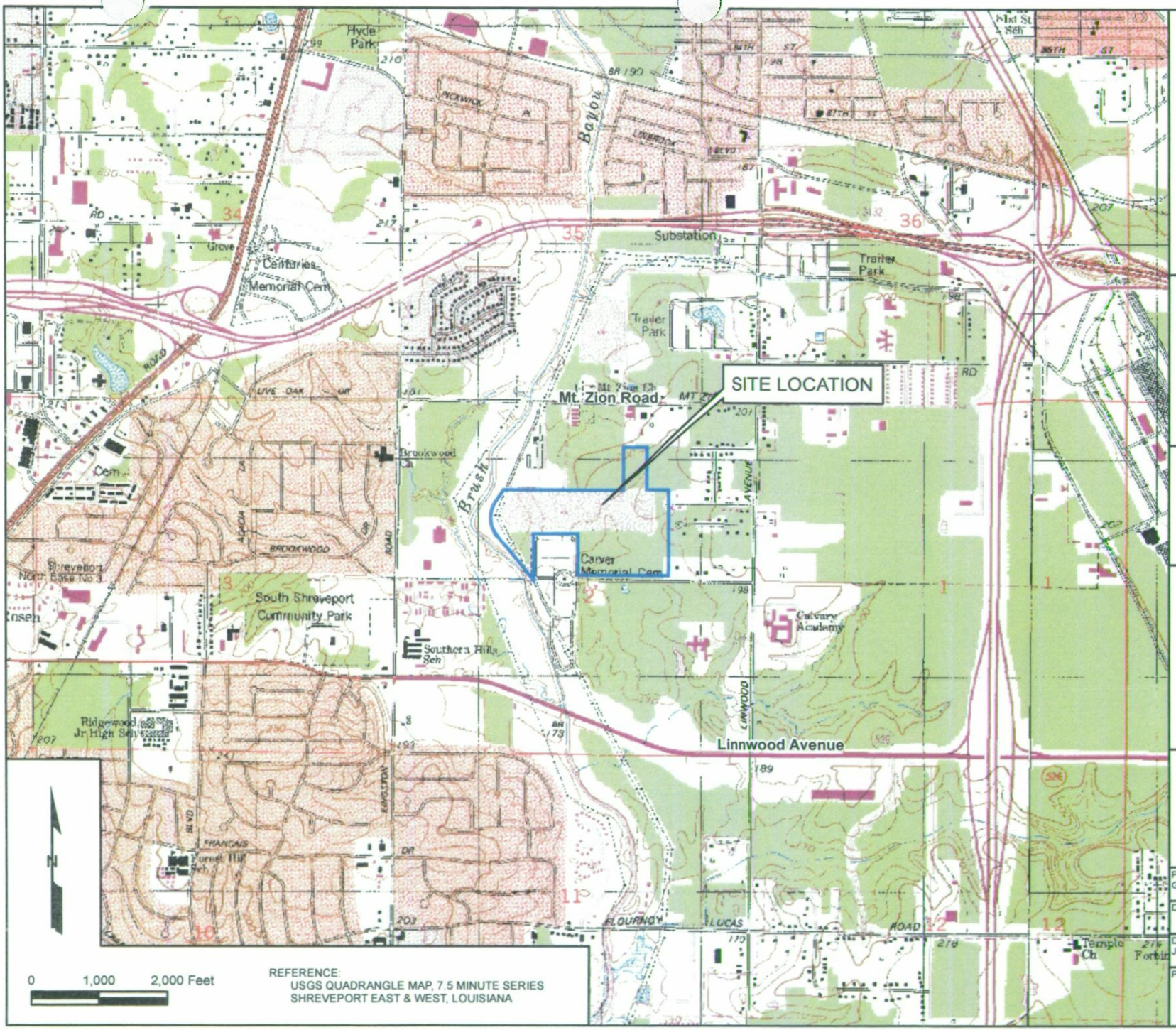
There are no other sites in the surrounding area that would offer more protection to the environment without unduly curtailing the non-environmental benefits. There are limited numbers of sites that contain former borrow pits. Any new site would then require the excavation of individual cells before they could be utilized for the disposal of construction and demolition debris waste. This additional activity would increase the cost of disposal. Finally, the use of an alternate site would mean that the borrow pit on Mt. Zion Road would then be left open creating a safety issue for the surrounding community.

5. a discussion and description of the mitigating measures which would offer more protection to the environment than the facility, as proposed, without unduly curtailing non-environmental benefits

RESPONSE:

The mitigating measures utilized at the facility meet or exceed the regulatory requirements. An additional thickness of clay added to the cell liners or the use of a synthetic liner would offer more protection to the environment but would cost significantly more and thus curtail the non-environmental benefit of the competitive cost of disposal at the facility.

B. An application for renewal or extension of an existing permit shall not be subject to submittal of the additional supplementary information required in Subsection A of this Section, unless said renewal or extension encompasses changes that need to be addressed as major applications.



REFERENCE:
USGS QUADRANGLE MAP, 7.5 MINUTE SERIES
SHREVEPORT EAST & WEST, LOUISIANA

SITE LOCATION MAP

Mt. Zion C&D Landfill
687 Mt. Zion Road
Shreveport, Louisiana

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004
FAX: 225-218-9677
WWW.ARCADIS-US.COM

PROJECT MANAGER: GHC	CHECKED BY: PM
DRAWING FILE:	GIS FILE:
DRAWING BY: JEC	DATE: 09-12-06
PROJECT NUMBER: LA002706.0001	DRAWING NUMBER: 1

REFERENCE:

USGS 2002 URBAN AREA HIGH RESOLUTION PROGRAM.

SHEET TITLE

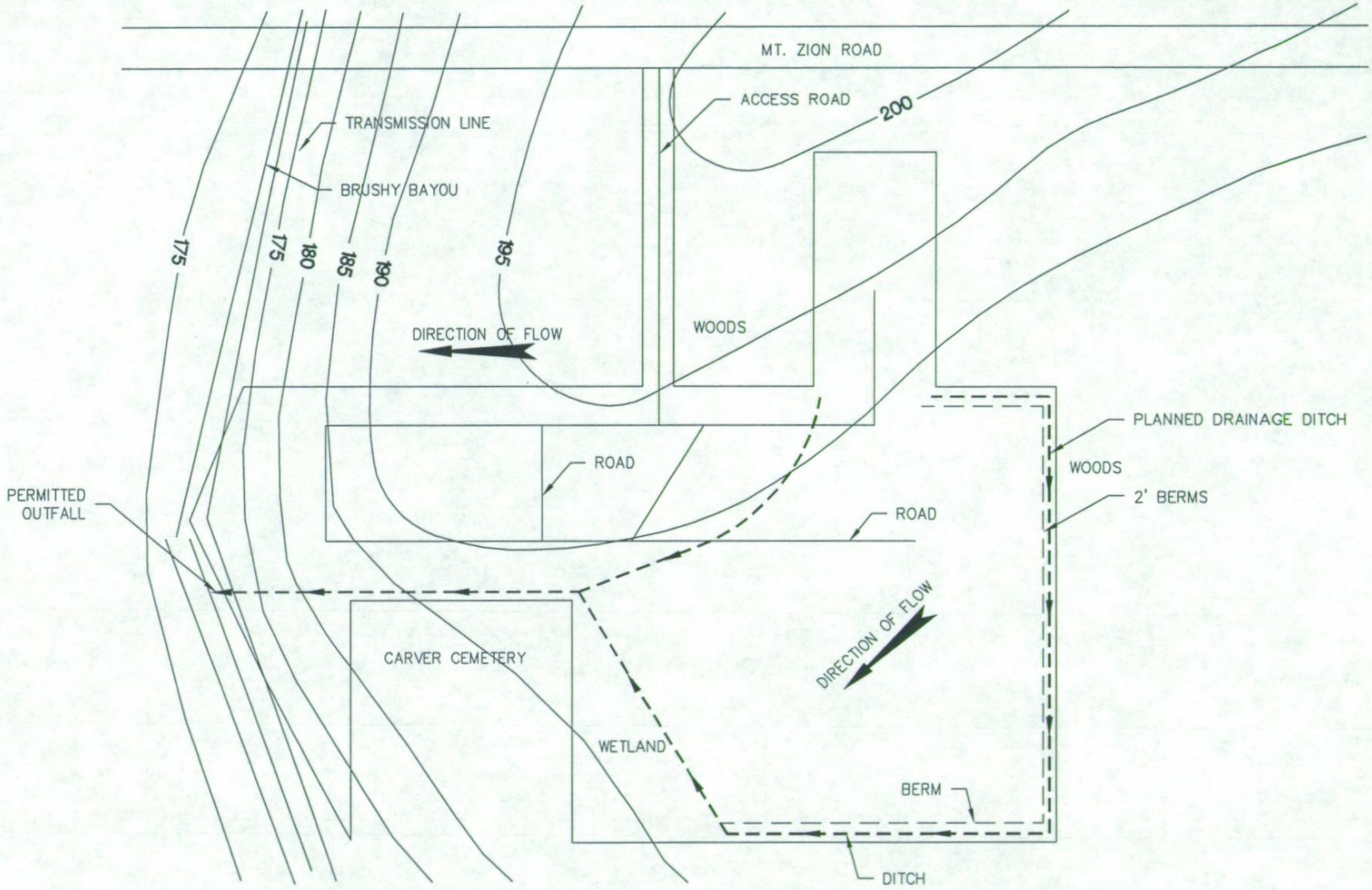
SITE PLAN

PROJECT TITLE

Mt. Zion C&D Landfill
687 Mt. Zion Road
Shreveport, Louisiana

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004 FAX: 225-292-5210
WWW.ARCADIS-US.COM

SEAL	SEAL
PROJECT MANAGER: G. CRAMER	DEPARTMENT MANAGER: G. CRAMER
DATE: 4-16-07	CHECKED BY: D. LARTON
TASK/PHASE NUMBER: 0001	DRAWN BY: S. MEK
PROJECT NUMBER: LA002706.0001	DRAWING NUMBER: 2



SCALE: NTS

DRAWN BY: D. EKINIA	CHECKED: P. McILWAIN
PROJECT MANAGER: GHC	DEPARTMENT MANAGER: GHC
DATE: 1/05/07	TASK/PHASE NUMBER: 0001

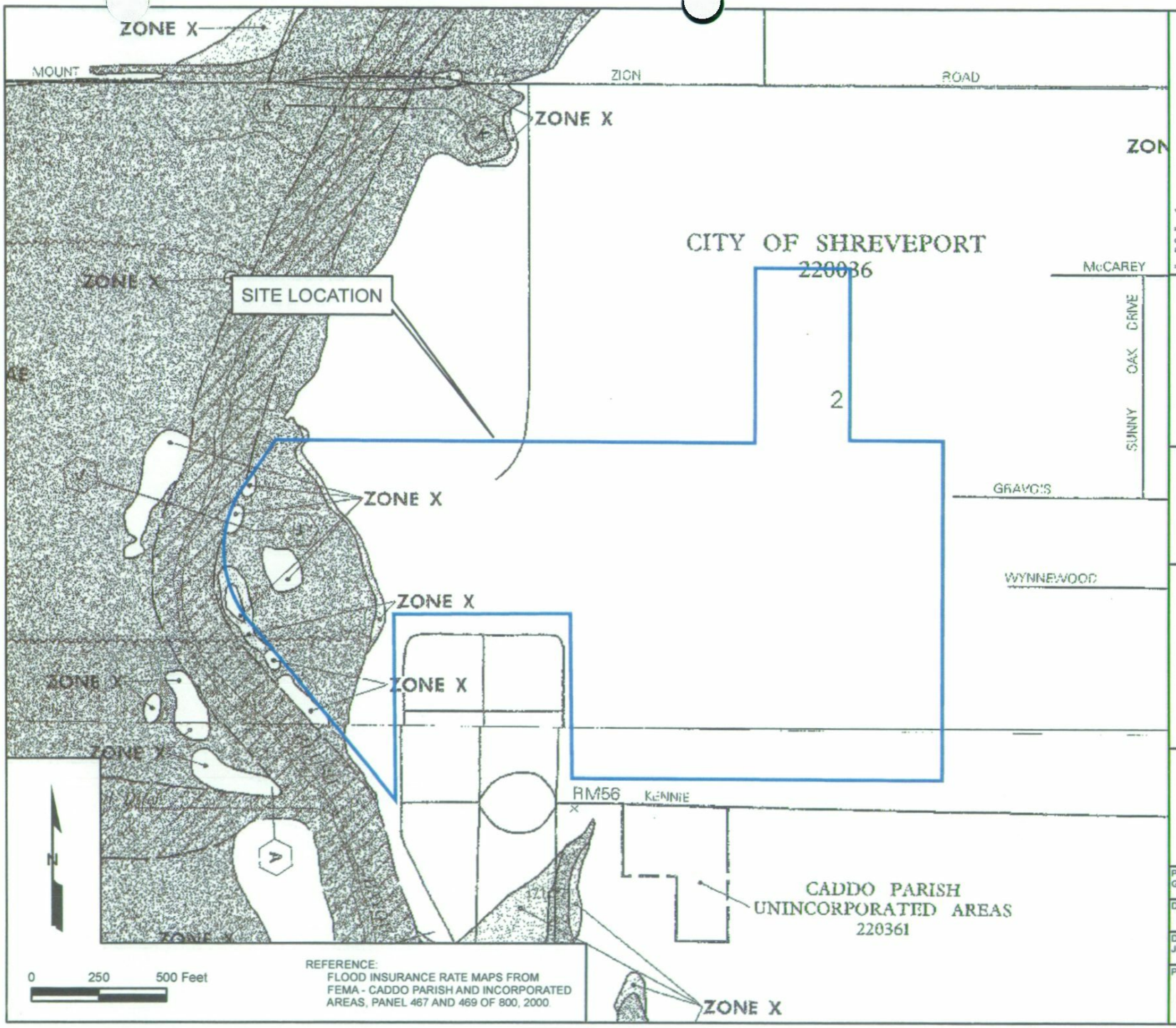
ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004
FAX: 225-218-9677
WWW.ARCADIS-US.COM

SITE CONTOUR MAP

MT. ZION C&D LANDFILL
687 MT. ZION ROAD
SHREVEPORT, LOUISIANA

PROJECT NUMBER: LA002706.0001

DRAWING NUMBER: 3



REFERENCE:
FLOOD INSURANCE RATE MAPS FROM FEMA - CADDO PARISH AND INCORPORATED AREAS, PANEL 467 AND 469 OF 800, 2000

Legend

- Approximate Fence Line
- Zone AE [1]
- Floodway Areas in Zone AE
- Zone X [2]
- Zone X [3]
- Floodplain Boundary
- Cross Section Line

[1] Base flood elevation determined.

[2] Areas of 500-year flood; areas of 100-year with average depths of less than 1 foot or with drainage areas less than 1 mile, and areas protected by levees from 100-year flood.

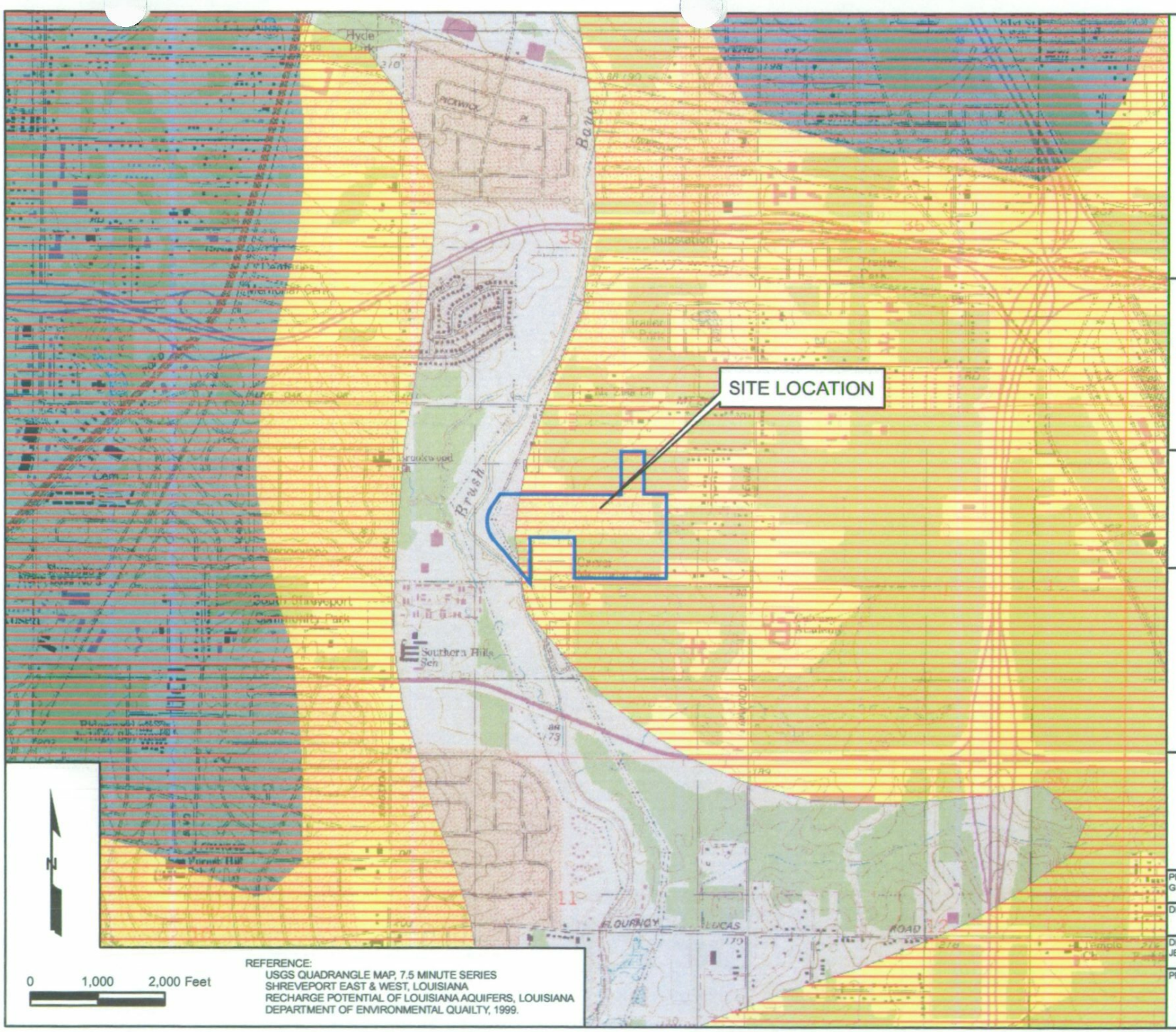
[3] Areas determined to be outside 500-year floodplain.

FEMA FLOOD INSURANCE RATE MAP

Mt. Zion C&D Landfill
687 Mt. Zion Road
Shreveport, Louisiana

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004
FAX: 225-218-9677
WWW.ARCADIS-US.COM

PROJECT MANAGER: GHC	CHECKED BY: PM
DRAWING FILE:	GIS FILE:
DRAWING BY: JEC	DATE: 09-12-06
PROJECT NUMBER: LA002706.0001	DRAWING NUMBER: 4



REFERENCE:
USGS QUADRANGLE MAP, 7.5 MINUTE SERIES
SHREVEPORT EAST & WEST, LOUISIANA
RECHARGE POTENTIAL OF LOUISIANA AQUIFERS, LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUAILTY, 1999.

Legend

Approximate Fence Line

Recharge Potential

- High Recharge Potential
- Moderate Recharge Potential
- Low Recharge Potential
- No Recharge Potential

Aquifer System

- Alluvial
- Carrizo-Wilcox
- Chicot/Terraces

AQUIFER RECHARGE POTENTIAL MAP

Mt. Zion C&D Landfill
687 Mt. Zion Road
Shreveport, Louisiana

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004
FAX: 225-218-9677
WWW.ARCADIS-US.COM

PROJECT MANAGER: GHC	CHECKED BY: PM
DRAWING FILE:	GIS FILE:
DRAWING BY: JEC	DATE: 09-12-06
PROJECT NUMBER: LA002706.0001	DRAWING NUMBER: 5

ARCADIS

Appendix A

Legal Proofs

The Times

PROOF OF PUBLICATION

Public Notice

Of

Intent to Submit Permit Application

Mt. Zion Road C & D Site

687 Mount Zion Road, Shreveport, Caddo Parish, Louisiana

Notice is hereby given that Mt. Zion C & D, LLC does intend to submit to the Department of Environmental Quality, Office of Environmental Services, Waste Permits Division, an application for a permit to operate a construction/demolition debris and woodwaste facility in Caddo Parish, Range 12W, Township 16N, Section 2, which is located off Mt. Zion Road approximately [illegible] from Linwood [illegible] in Shreveport, [illegible]ana.

Comments concerning the facility may be filed with the secretary of the Louisiana Department of Environmental Quality at the following address:

Louisiana Department of Environmental Quality
Office of Environmental Services
Waste Permits Division
Post Office Box 4313
Baton Rouge, Louisiana 70821-4313

The Times:
May 10, 2007

STATE OF LOUISIANA

PARISH OF CADDO

Before me, the undersigned authority, personally came and appeared

Altheas Critton personally known to me,

Who being duly sworn, deposes and says that she is the Assistant to the Classified Advertising Manager of The Times, and that the attached Advertisement entitled:

Public Notice Of Intent to Submit Permit Application
Mt. Zion Road C & D Site
687 Mount Zion Road, Shreveport, Caddo Parish, Louisiana

As per copy of advertisement hereto annexed, was published in The Times on the following dates to wit:

May 10, 2007

(Signed) Altheas Critton

Sworn to and subscribed before me this 10th day of May, 2007

Diana W. Barber

DIANA W. BARBER, NOTARY PUBLIC # 60491
CADDO PARISH, LOUISIANA
MY COMMISSION IS FOR LIFE

(Notary)

GANNETT

CAPITAL CITY PRESS

Publisher of
THE ADVOCATE

PROOF OF PUBLICATION

The hereto attached notice was
published in THE ADVOCATE,
a daily newspaper of general circulation
published in Baton Rouge, Louisiana,
and the official Journal
of the State of Louisiana,
the City of Baton Rouge,
and the Parish of East Baton Rouge,
in the following issues:

05/11/07

Susan A. Bush, Public Notices Clerk

Sworn and subscribed before me by the
person whose signature appears above:

May 11, 2007

Pegeen Singley, Notary Public, #66565
My Commission Expires: Indefinite
Baton Rouge, Louisiana

Public Notice

Of

Intent to Submit Permit Application

Mt. Zion Road C & D Site

687 Mount Zion Road, Shreveport, Caddo Parish, Louisiana

Notice is hereby given that Mt. Zion C & D, LLC does intend to submit to the Department of Environmental Quality, Office of Environmental Services, Waste Permits Division, an application for a permit to operate a construction/demolition debris and woodwaste facility in Caddo Parish, Range 12W, Township 16N, Section 2, which is located off Mt. Zion Road approximately 0.5 mile from Linwood Avenue in Shreveport, Louisiana.

Comments concerning the facility may be filed with the secretary of the Louisiana Department of Environmental Quality at the following address:

Louisiana Department of Environmental Quality
Office of Environmental Services
Waste Permits Division
Post Office Box 4313
Baton Rouge, Louisiana 70821-4313

3624140-may 11-1t

ARCADIS G&M INC 3624140
BERVA NOONE
10352 PLAZA AMERICANA DR
BATON ROUGE LA 70816

The Times

PROOF OF PUBLICATION

PUBLIC NOTICE
OF
Intent To Submit
Permit Application

Mt. Zion Road
C & D Site

687 Mt. Zion Road,
Shreveport, Caddo
Parish, Louisiana

Notice is hereby given that Mt. Zion C & D, LLC does intend to submit to the Department of Environmental Quality, Office of Environmental Services, Permits Division, an application for a permit to operate a construction/demolition debris and woodwaste facility in Caddo Parish, Range 12W, Township 16N, Section 2, which is located off Mt. Zion Road approximately 0.5 miles from Linwood Avenue in Shreveport, Louisiana.

Comments concerning the facility may be filed with the secretary of the Louisiana Department of Environmental Quality at the following address:

Louisiana Department of Environmental Quality Office of Environmental Services
Permits Division
Post Office Box 4313
Baton Rouge, Louisiana 70821-4313

The Times:
January 27, 2007

STATE OF LOUISIANA

PARISH OF CADDO

Before me, the undersigned authority, personally came and appeared

Altheas Critton personally known to me

Who being duly sworn, deposes and says that she is the Assistant to the Classified Advertising Manager of The Times, and that the attached Advertisement entitled:

PUBLIC NOTICE OF Intent To Submit Permit Application
Mt. Zion Road C & D Site

As per copy of advertisement hereto annexed, was published in The Times on the following dates to wit:

January 27, 2007

(Signed) Altheas Critton

Sworn to and subscribed before me this 27th day of April, 2007

Diana W. Barber

DIANA W. BARBER, NOTARY PUBLIC # 60171
CADDO PARISH, LOUISIANA
MY COMMISSION IS FOR LIFE

(Notary)

GANNETT

UNITED STATES OF AMERICA

State of Louisiana

Al Ater

SECRETARY OF STATE

As Secretary of State, of the State of Louisiana, I do hereby Certify that a copy of the Articles of Organization and Initial Report of

MT. ZION C & D, L.L.C.

Domiciled at SHREVEPORT, LOUISIANA,

Was filed and recorded in this Office on August 24, 2005,

And all fees having been paid as required by law, the limited liability company is authorized to transact business in this State, subject to the restrictions imposed by law, including the provisions of R.S. Title 12, Chapter 22.

Gary Logan
Caddo Parish Clerk of Court
1995721
08/29/2005 02:48 PM

In testimony whereof, I have hereunto set my hand and caused the Seal of my Office to be affixed at the City of Baton Rouge on,
August 24, 2005

ABA 36005962K

Secretary of State

STATE OF LOUISIANA
UNION JUSTICE CONFIDENCE
SECRETARY OF STATE

CERTIFICATE SS 102 PRINTED SEAL (Rev. 10/10)

Minutes of a Meeting of the Managing Members of Mt. Zion C&D, LLC

A meeting of the Managing Members of Mt. Zion C&D, LLC was held on the 27th day of August, 2007, for the purpose of approving George Cramer of Arcadis, and engineering firm located in Baton Rouge, LA, as designated signatory to Mt. Zion C&D, LLC's solid waste permit application to the Louisiana Department of Environmental Quality.

Present at this meeting were the two Managing Members:

* E-1 of Shreveport, LLC, represented by its Managing Member, David Strong
* Harrelson & Associates, LLC, represented by its Managing Member, Michael Harrelson

Therefore, 100% of the ownership of Mt Zion C&D, LLC was represented at this meeting.

A vote was taken and Mr. Cramer of Arcadis was unanimously elected to sign all documents related to the solid waste permit for Mt. Zion C&D, LLC.

David Strong
E-1 of Shreveport, LLC

Michael Harrelson
Harrelson & Associates, LLC

ARCADIS

Appendix B

Zoning Classification

METROPOLITAN
PLANNING COMMISSION
Shreveport / Caddo Parish

505 Travis Street
P.O. Box 31109
Shreveport, LA 71130
Tel (318) 673-6480
Fax (318) 673-6475

November 11, 2008

George H. Cramer, II, P. G.
Associate Vice President/Principal Hydrogeologist
ARCADIS
10352 Plaza Americana Drive
Baton Rouge, LA 70816

Dear Mr. Cramer:

SUBJECT: 687 MT. ZION ROAD (MT. ZION LANDFILL)

Your letter directed to Mr. Charles Kirkland dated October 30, 2008, has been forwarded to me for response. After a thorough review of our files, we concluded that the attached letter from 1992 indicating that Grace Construction Dirt Pit attained a non-conforming status, regarding zoning for a dirt pit, is accurate. Further review revealed that on September 17, 2007, the Type 3 Landfill at this location was granted a non-conforming status.

Based on the above information, the entire site has now achieved a non-conforming status and can continue to operate as it was on the September 17, 2007 date. If any expansion of these uses should occur, the site would be in violation of the Zoning Ordinance of the City of Shreveport.

Hope that this information satisfactorily addresses your concerns.

Sincerely,

Alan Clarke
Zoning Administrator

AC/das

cc: Charles Kirkland, MPC Executive Director

METROPOLITAN
PLANNING COMMISSION
Shreveport / Caddo Parish

1234 Texas
P.O. Box 31109
Shreveport, LA 71130
Tel (318) 673-6480
Fax (318) 673-6475

August 17, 1992

Milton L. Williams
Councilman-District D
P. O. Box 5817
Shreveport, La. 71105

SUBJECT: GRACE CONSTRUCTION'S DIRT PIT

Dear Councilman Williams:

Per our conversation of August 14, 1992, concerning the above subject, I explained that the dirt pit in question had been in operation for 3 to 4 years and had attained non-conforming status, which means that they have a right to operate and this right remains in force unless they shut down business operations for one (1) year or more.

After speaking with Ms. Elizabeth Tuggle of 448 Kennie Rd., I informed her of the above and that I would be turning the matter over to the City Engineering Department. I turned the matter over to Mr. John May, City Engineer.

I asked Mr. May to inspect the dirt pit to see if there was anything they could find and to also contact Ms. Tuggle which he did. Mr. May went to the dirt pit and video taped its operations at which time he spoke with other residents of Kennie Road and assured them that he had found no violations.

After exhausting all efforts within City Hall, we then contacted the state's D.E. Q. Office and found that they had been monitoring this pit since it began operation.

I spoke with Ms. Tuggle again and informed her of this and gave her names of persons and telephone numbers she could call at D.E. Q. to confirm information that I had given her.

This matter, after all of the above research, was turned over to the City Attorney's Office to see if we could legally do anything. We were advised not to persue any actions since this was a non-conforming operation and they had a right to continue. We sent the video tape to the Assistant City Attorney, Ms. Terri Scott and are awaiting further directions from her office.

Sincerely,

Charlie W. Allum

Charlie W. Allum
ZONING ADMINISTRATOR

CWA/gcb

xc: Ms. Elizabeth Tuggle
Terri Scott, Assistant City Attorney
Charles Kirkland, MPC Executive Director
Judy Battle, Assistant Director
Arthur Thompson, Clerk of Council
John M. May, Engineer

GRACE CONSTRUCTION COMPANY

4000 BENTON ROAD - P. O. DRAWER 6217
BOSSIER CITY, LA 71171
PHONE (318) 746-3411

August 7, 1989

01239191

FILED & RECORDED
CADDO PARISH, LA.
Aug 7 9 10 AM '89
DEPUTY CLERK & RECORDER

STATE OF LOUISIANA

PARISH OF CADDO

As owner of the following described property,

A TRACT OF LAND totaling 68.480 acres located in the N½ of Sect.2, T16N,R14W, Caddo Parish, Louisiana. See attached plat as prepared by Mr. John M. Webb, Registered Profiessionl Land Surveyor, Reg. No. 4605, NTB, Inc., Shreveport, Louisiana.

Certain materials including tree limbs, stumps, branches, and broken concrete in small quantities have been hauled to, dumped and covered with dirt on the listed property.

GRACE CONSTRUCTION COMPANY

James B. Thomas

James B. Thomas
Vice President

ARCADIS

Appendix C

Letter Concerning Traffic Flow

Shreveport
All-America City

CITY OF SHREVEPORT

P.O. BOX 31109 SHREVEPORT, LA 71130
web site: www.ci.shreveport.la.us

January 7, 2007

ARCADIS G&M , Inc
ATTN: Mr. George H. Cramer, II
10352 Plaza Americana Drive
Baton Rouge, LA 70816

Dear Mr. Cramer:

This is in response to your letter received January 3rd, 2007. You requested that we review your site for comment in your update to the Louisiana Department of Environmental Quality (LDEQ).

The projected 30 vehicle trips per day on the routes allowed to trucks in the vicinity are minimal to the overall traffic volumes in the area. Therefore, the continued operation of this site will have no significant impact on the normal flow of traffic in the area. Since this is an existing operation and there is no indication of expansion, its continued operation will have no additional negative impact on future traffic in the area. Should this facility enlarge its operation or increase its level of delivery in the future, a separate evaluation on the impact will be needed.

We hope that this has adequately answered your questions. If we can be of further service or if you need additional information, please let us know.

Sincerely,

Michael Erlund, P.E.
City Traffic Engineer

ME:fc

Dept. of Operational Services
Phone: 318-673-6181

Office of the City Traffic Engineer
Fax: 318-673-6185

2123 Lakeshore Dr., Shreveport, LA 71101
e-mail: merlund@ci.shreveport.la.us

Appendix D

Aerial Photograph

Legend

- Site Boundary
- One Mile Radius

SITE AERIAL PHOTOGRAPHY

Mt. Zion C&D Landfill
687 Mt. Zion Road
Shreveport, Louisiana

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004
FAX: 225-218-9677
WWW.ARCADIS-US.COM

PROJECT MANAGER: MR	CHECKED BY: TM
DRAWING FILE:	CAD FILE:
DRAWING BY: ATC	DATE: 09-07-07
PROJECT NUMBER: LA002706.0001	DRAWING NUMBER: 1

0 200 400 Feet

REFERENCE:
AERIAL PHOTOGRAPHY FROM ESRI ONLINE
GIS © PRIME WORLD IMAGERY. DATE NOT KNOWN.

ARCADIS

Appendix E

Agency Letters

State of Louisiana

KATHLEEN BABINEAUX BLANCO
GOVERNOR

DEPARTMENT OF WILDLIFE & FISHERIES
POST OFFICE BOX 98000
BATON ROUGE, LA 70898-9000
(225) 765-2800

BRYANT O. HAMMETT, JR.
SECRETARY

Date	January 24, 2007
Name	George H. Cramer II
Company	ARCADIS G&M, Inc.
Street Address	10352 Plaza Americana Drive
City, State, Zip	Baton Rouge, LA 70816
Project	Solid Waste Permit Renewal Mt. Zion Road Disposal Site Shreveport, LA
Invoice Number	07012402

Personnel of the Habitat Section of the Fur and Refuge Division have reviewed the preliminary data for the captioned project. After careful review of our database, no impacts to rare, threatened, or endangered species or critical habitats are anticipated for the proposed project. No state or federal parks, wildlife refuges, scenic streams, or wildlife management areas are known at the specified site within Louisiana's boundaries.

The Louisiana Natural Heritage Program (LNHP) has compiled data on rare, endangered, or otherwise significant plant and animal species, plant communities, and other natural features throughout the state of Louisiana. Heritage reports summarize the existing information known at the time of the request regarding the location in question. The quantity and quality of data collected by the LNHP are dependent on the research and observations of many individuals. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Louisiana have not been surveyed. This report does not address the occurrence of wetlands at the site in question. Heritage reports should not be considered final statements on the biological elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. LNHP requires that this office be acknowledged in all reports as the source of all data provided here. If at any time Heritage tracked species are encountered within the project area, please contact the LNHP Data Manager at 225-765-2643. If you have any questions, or need additional information, please call 225-765-2357.

Sincerely,

Nicole Lorenz for

Gary Lester, Coordinator
Natural Heritage Program

FILE COPY

ARCADIS
Infrastructure, environment, facilities

ARCADIS G&M, Inc.
10352 Plaza Americana Drive
Baton Rouge
Louisiana 70816
Tel 225 292 1004
Fax 225 218 9677
www.arcadis-us.com

CERTIFIED MAIL 7006 0810 0006 6496 6140
RETURN RECEIPT REQUESTED

Ms. Pam Breaux
State Historic Preservation Officer
Louisiana Department of Culture, Recreation, and Tourism
Post Office Box 44247
Baton Rouge, Louisiana 70804-4247

Date: 4-23-07
No known archaeological sites or historic properties will be affected by this undertaking. This effect determination could change should new information come to our attention.
Pam Breaux: Pam Breaux
State Historic Preservation Officer

ENVIRONMENTAL

Subject:
Solid Waste Permit Renewal
Mt. Zion Road Disposal Site
Shreveport, Louisiana

Date:
28 December 2006

Contact:
George Cramer, P.G.

Extension:
228

Email:
gcramer@arcadis-us.com

Our ref:
LA002706.0001.00001

Harrelson/2706.1/C/9/egp

Dear Ms. Breaux:

The Louisiana Department of Environmental Quality (LDEQ) has requested that the solid waste permit application for the Mt. Zion Road Construction/Demolition Landfill, which is currently being processed by LDEQ, be updated. In order to complete this updated application, Mt. Zion C&D, LLC, must submit to LDEQ a letter from the Louisiana Department of Culture, Recreation, and Tourism indicating that there are no known archaeological sites or historical structures located within 1,000 feet of the permit site.

The Mt. Zion site is a wood waste and construction/demolition landfill. It has been concluded that the activity at the site will not have any adverse impact on cultural or historic resources within the area of permit renewal. A site topographic map (Attachment A) has been included for your reference.

In 1994, a request was made to your office regarding this site and a letter was issued indicating the site file data were reviewed. No known archaeological sites or historical structures were identified. Please see Attachment B for a copy of the previous letter.

We request that your office provide any additional information available and a letter of concurrence regarding the area within a 1,000-foot radius of the site. The letter should be sent to the attention of Mr. George H. Cramer, II, at the above address. If you have any questions, please contact one of the undersigned at (225) 292-1004.

Sincerely,

ARCADIS G&M, Inc.

George H. Cramer, II, P.G.
Associate Vice President/Principal Hydrogeologist

Rudy J. Guichard
Vice President/Area Manager

Imagine the result

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
4155 CLAY STREET
VICKSBURG, MISSISSIPPI 39183-3435

REPLY TO
ATTENTION OF:

January 30, 2007

Operations Division

SUBJECT: Jurisdictional Determination - Mt. Zion Road Construction/Demolition Landfill Site, Caddo Parish, Louisiana

Mr. George H. Cramer, II
ARCADIS G&M, Incorporated
10352 Plaza Americana Drive
Baton Rouge, Louisiana 70816

Dear Mr. Cramer:

This is in response to your letter requesting a wetland determination for the existing landfill site located in section 2, T16N-R14W, Caddo Parish, Louisiana.

Based upon the information provided, it appears there are jurisdictional waters of the United States, including wetlands, located on the property subject to regulation pursuant to Section 404 of the Clean Water Act (enclosure 1). Any work involving the discharge of dredged or fill material into jurisdictional waters of the United States will require a Department of the Army Section 404 permit prior to beginning work. Please note that this jurisdictional determination is preliminary and should be used for planning purposes only. A final determination will be made upon your submission of a completed application with project plans. For your information, I have enclosed a copy of an appeals form for this preliminary determination (enclosure 2).

For your convenience, I am enclosing a Department of the Army permit application package with instructions (enclosure 3). Your client's application for any proposed work within the project area should be submitted at least 120 days in advance of the proposed starting date. To expedite the evaluation process, please refer to Identification No. MVK-2007-100 when submitting the application.

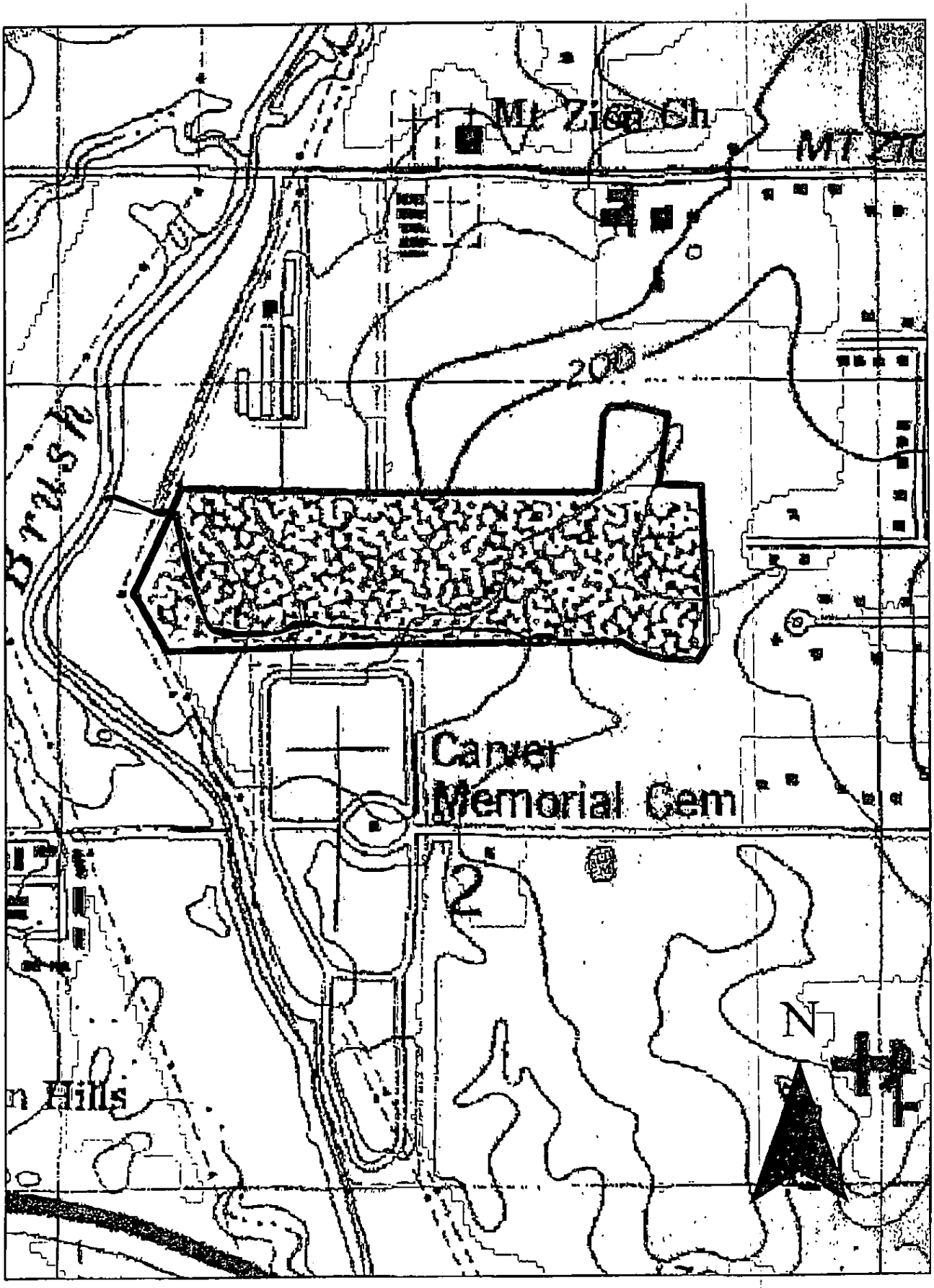
If you have any questions, please contact Mr. Charles R. Allred, Jr., telephone (601) 631-5546, fax (601) 631-5459 or e-mail address: regulatory@mvk02.usace.army.mil.

Sincerely,

David Lofton

David Lofton
Acting Chief, Enforcement Section
Regulatory Branch

Enclosures



Property limits

Jurisdictional Waters of the U.S., including wetlands

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Mt. Zion C&D, LLC	File Number: 2007-100	Date: January 30, 2007
Attached is:		See Section Below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of Permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
X	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

• ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations (JD) associated with the permit.

• OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit.

• ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

• APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

• ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

• APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Charles R. Allred, Jr.
U.S. Army Corps of Engineers
Regulatory Branch
4155 Clay Street
Vicksburg, MS 39183-3435
(601) 631-5546

If you only have questions regarding the appeal process you may also contact:

Division Engineer
Attn: Appeals Review Officer
Mississippi Valley Division
Post Office Box 80
Vicksburg, MS 39181-0080
(601)634-5820

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
Signature of appellant or agent.		

7-8-94

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
2101 NORTH FRONTAGE ROAD
VICKSBURG, MISSISSIPPI 39180-5191

REPLY TO ATTENTION OF

July 6, 1994

Operations Division
Regulatory

SUBJECT: Determination of Permit Requirements

Mr. John W. Storment, P.E., C.I.H.
ArkLaTex, Environmental Consultants,
Incorporated
Post Office Box 17867
Shreveport, Louisiana 71138

Dear Mr. Storment:

I refer to your letter concerning proposed Type III solid waste landfill located in section 2, T16N-R14W, Caddo Parish, Louisiana. Based upon the information provided, it appears that a Department of the Army Section 10/404 permit will not be required for the proposed site, since the location is not considered a jurisdictional wetland or other waters of the United States.

This determination of permit requirements is applicable for a period not to exceed 5 years from the date of this letter unless superseded by law or regulation. If the proposed work is not completed by this time, you should contact this office for a reevaluation of permit requirements and reference the number CELMK-OD-FS-941008610-TJC when submitting the information. This determination of Department of the Army regulatory requirements does not convey any property rights, either in real estate or material or any exclusive privileges, and does not authorize any injury to property or invasion of rights or local laws or regulations, or obviate the requirement to obtain State or local assent required by law for the activity discussed herein.

Thank you for advising us of your plans. If we may be of any further assistance in this matter, please contact Mr. Timothy J. Caldwell, telephone (601) 631-5080 or telefax (601) 631-5459.

Sincerely,

Kenneth P. Mosley
Chief, Enforcement Section
Regulatory Branch

Copy Furnished:

U.S. Environmental Protection Agency
Wetlands Protection Section (6E-F)
1445 Ross Avenue
Dallas, Texas 75203-2733

SHREVEPORT FIRE DEPARTMENT

263 N. Common Street
Shreveport, Louisiana 71101
(318) 673-6650 • FAX: (318) 673-6656

Kelvin J. Cochran, Fire Chief

September 06, 2007

Mr. George Cramer
Arcadis G&M, Inc.
10352 Plaza Americana Drive
Baton Rouge, La. 70816

Dear Mr. Cramer:

In response to your request dated July 23, 2007, this letter is to confirm that the Shreveport Fire Department, City of Shreveport Louisiana, is the sole provider for the Emergency Medical Services within the city limits of Shreveport including treatment and transport of emergency patients.

It has been determined that 687 Mt. Zion Road does fall within the city limits of Shreveport and all fire/ems related responses will be made to this address by the Shreveport Fire Department.

The Shreveport Fire Department is a Class 1 rated fire department and meets the requirements of NFPA Section 473 of the Life Safety Code. Also, the Shreveport Fire Department is capable of responding to a hazardous material incident in accordance with the definitions of 29 CFR 1910.120(a)(3):

> 1910.120(a)(3)
> ***Emergency response*** or ***responding to emergencies*** means a response effort by employees from outside the immediate release area or by other designated responders (i.e., mutual aid groups, local fire departments, etc.) to an occurrence which results, or is likely to result, in an uncontrolled release of a hazardous substance.

If you should need any additional information, please feel free to call my office at 318-673-6720

Nathan Tabor
Assistant Chief of EMS
Shreveport Fire Department

SHREVEPORT FIRE DEPARTMENT

263 N. Common Street
Shreveport, Louisiana 71101
(318) 673-6650 • FAX: (318) 673-6656

Kelvin J. Cochran, Fire Chief

Fire Administration
263 N. Common Street
Shreveport, LA 71101
(318) 673-6650

Deputy Fire Chief
263 N. Common Street
Shreveport, LA 71101
(318) 673-6658

Assistant Chief
263 N. Common Street
Shreveport, LA 71101
(318) 673-6662

Communications
1144 Texas Avenue
Shreveport, LA 71101
(318) 675-2200
Fax (318) 675-2206

EMS
263 N. Common Street
Shreveport, LA 71101
(318) 673-6720
Fax (318) 673-6727

Maintenance
6300 Kennedy
Shreveport, LA 71109
(318) 673-6730
Fax (318) 673-6735

Prevention
505 Travis Street, Suite 510
Shreveport, LA 71101
(318) 673-6740
Fax (318) 673-6744

Training
6440 Greenwood Road
Shreveport, LA 71119
(318) 673-6766
Fax (318) 673-6769

www.shreveportfire.org

September 14, 2006

Arcadis G&M, Inc
10352 Plaza Americana Drive
Baton Rouge, LA 70816

Subject: Certification to response Requirements
Mt. Zion Road Disposal site
Shreveport, LA

Dear Mr. Cramer:

This letter is in response to your request for confirmation of Professional Competence of Responders to hazardous materials incidents. The Shreveport Fire Department has the training, personnel and equipment to meet the response requirements outlined in the National Fire Protection Association's Section 472.

I hope this letter is adequate for your needs. If you have any further questions or concerns with response capabilities of the Shreveport Fire Department do not hesitate to contact me.

Sincerely,

Barry Lewis
District Chief

WILLIS-KNIGHTON HEALTH SYSTEM

JAMES K. ELROD
President
CORPORATE OFFICES
2600 Greenwood Road
Shreveport, LA 71103
(318) 212-4785

WILLIS-KNIGHTON MEDICAL CENTER
Shreveport

WILLIS-KNIGHTON SOUTH
Shreveport

WK BOSSIER HEALTH CENTER
Bossier City

WK PIERREMONT HEALTH CENTER
Shreveport

WILLIS-KNIGHTON CANCER CENTER
Shreveport

WILLIS-KNIGHTON HEART HOSPITAL
Shreveport

WK PROGRESSIVE CARE CENTER
Shreveport

WK CLAIBORNE REGIONAL HEALTH CENTER
Homer

WORK KARE LOCATIONS
Medical Center South
Bossier
Pierremont

FITNESS & WELLNESS LOCATIONS
Medical Center South
Bossier
Pierremont
Allendale/Pierre Avenue
Claiborne

PROJECT NEIGHBORHEALTH NEIGHBORHOOD LOCATIONS
reveport, Louisiana
Martin Luther King
Allendale
Cedar Grove
Plain Dealing, Louisiana
Bradley, Arkansas

WEB SITE
www.wkhs.com

September 21, 2007

Arcadis U.S., Inc.
10352 Plaza Americana Drive
Baton Rouge, LA 70818

Re: Mt. Zion Road Construction Demolition Landfill
687 Mt. Zion Road
Shreveport, LA

To Whom It May Concern:

This is to verify that Willis Knighton Health System operates a full service Emergency Department at both the Willis Knighton South campus, located at 2510 Bert Kouns and at Willis Knighton Pierremont, located at 8001 Youree Drive in Shreveport, Louisiana. Both of the previously mentioned EDs have the ability to treat victims contaminated with hazardous materials. The above referenced site is located almost equal distance from the two facilities. The first line of treatment should be calling EMS (911) as they have units and personnel available to begin decontamination at the scene.

Willis Knighton is happy to assist you with this process to the best of our abilities. Please feel free to contact me at 318-212-4706 if I can be of any further assistance in this matter.

Sincerely,

Susan Cash, RN
Director, Emergency Services
Willis Knighton Health System

ARCADIS

Appendix F

Geotechnical Investigation

GEOTECHNICAL INVESTIGATION
FOR
A CLASS III CONSTRUCTION/DEMOLITION DEBRIS FACILITY
MT. ZION FACILITY
SHREVEPORT, LOUISIANA

GENERAL:

This study was authorized by Grace Construction, Inc. to Mr. Bobby Raines of ALTEC Environmental Consultants, Inc. of Shreveport, Louisiana.

The scope of this study was to explore the subsurface conditions of a proposed construction site for the purpose of identifying soil strata and characteristics.

FIELD OPERATIONS:

The subsurface exploration at the site consisted of four 15-foot excavated areas with a track hoe. The excavated areas were visually inspected and analyzed by a geologist. Soil descriptions of each excavated area are attached.

SITE AND SOIL CONDITIONS:

The site is currently being used as a Type III Construction Demolition Debris disposal facility. The soil conditions described in the driller's boring logs (attached) indicate there are no clays of "low permeability" at the base of the excavated locations. The soil conditions at the site will require a layer of impermeable soil at the base of each cell.

Groundwater was not encountered in any of the excavated locations.

SUMMARY:

The sandy silt and loose tan sand nature of the soil conditions at the base of the excavated areas developed in July of 1994 provide evidence that a layer of soil with low permeability is not present. Grace Construction, Inc. proposes a 6" clay liner in 5-acre cells at the base of each cell.

SAMPLE LOG FOR DRILLER'S BORING

DATE: 7/20/94 ~~BMW~~ Mt. Zion BORING NUMBER: BH-1

SAMPLING METHOD: Visual Inspection From Excavation GEOLOGIST: Bobby Raines

* WATER TABLE ▽

CORE DESCRIPTION

0'

0'-5' 50% tan very fine grain sandstone and 50% tan silt

2'

6" of dark gray clay laminations from 3'-3'6"

4'

5' 5'-11' Gray silt with 10% very fine grain sandstone and 10% gray clay

6'

8'

10'

11' 11'-13' Tan/Gray silt with 10% very fine grain sandstone.

12'

13' 13'-15' Gray silt with 10% very fine grain sandstone.

14'

16'

18'

20'

22'

24'

26'

* DENOTES WATER-SATURATED SAMPLE

BOREHOLE DEPTH: 15'

FIELD OBSERVATIONS: Borehole located on west side of facility.

C:1

SAMPLE LOG FOR DRILLER'S BORING

DATE: 7/20/94 BMW-Mt. Zion BORING NUMBER: BH-2

SAMPLING METHOD: Visual Inspection From Excavation GEOLOGIST: Bobby Raines

* WATER TABLE ▽

CORE DESCRIPTION

0'

0'-4' light brown silty clay (70% clay)

2' some gray silty sandy clay

4' 4'-10' Same as 10'-13'

6'

8'

10'-13' Light gray silty sand with some organic laminations and

10' reddish/brown silty sandy laminations.

12'

13 13'-15' Light gray silty very fine grain sandstone with

14' some dark brown/red silty sand laminations -

16' very fine grained sandstones.

60% sandstones 30% silt 10% clay

18'

20'

22'

24'

26'

* DENOTES WATER-SATURATED SAMPLE

BOREHOLE DEPTH: 15'

FIELD OBSERVATIONS: Wellbore located on North side of facility

SAMPLE LOG FOR DRILLER'S BORING

DATE: 7/21/94 ~~BMW~~ Mt. Zion BORING NUMBER: BH-3

SAMPLING METHOD: Visual Inspection From Excavation GEOLOGIST: Bobby Raines

* WATER TABLE ▽

CORE DESCRIPTION

0'

0'- 5' Brown silt with some gray clay laminations.

2'

4'

5' 5'-10' Gray and brown laminated silty and sandy clay with

6' with numerous laminations indicating changing sequences of deposition.

8'

10'-11.5' Brown clay with gray and reddish brown laminations

10' less than 10% silt and very fine grain sand, rapidly changing sequences of deposition, laminations 2" thick

12'

11.5'-14' Brown silty very fine grain sandstone with some associated feldspar, tightly compacted

14'

14'-15' Gray silty sandy clay with some brown silty sandy clay laminations, tightly compacted, some organics associated.

16'

18'

20'

22'

24'

26'

* DENOTES WATER-SATURATED SAMPLE

BOREHOLE DEPTH: 15'

FIELD OBSERVATIONS: Located on East side of facility.

SAMPLE LOG FOR DRILLER'S BORING

DATE: 7/21/94 ~~BMW~~ Mt. Zion BORING NUMBER: ~~BH~~-4

SAMPLING METHOD: Visual Inspection From Excavation GEOLOGIST: Bobby Raines

* WATER TABLE ▽

CORE DESCRIPTION

0'

0'-5' Tan to gray silty sandstone

2'

4'

5' 5'-10' Gray silty very fine grain sandstone, some minor clay laminations.

6'

8'

10' 10'-13' Brown reddish tan and gray silty sandy clay with 4" iron ore streak from 11'-11'4".

12'

13' 13'-15' Gray silty very fine grain sandstone with some gray clay

14' laminations. Tightly compacted.

16'

18'

20'

22'

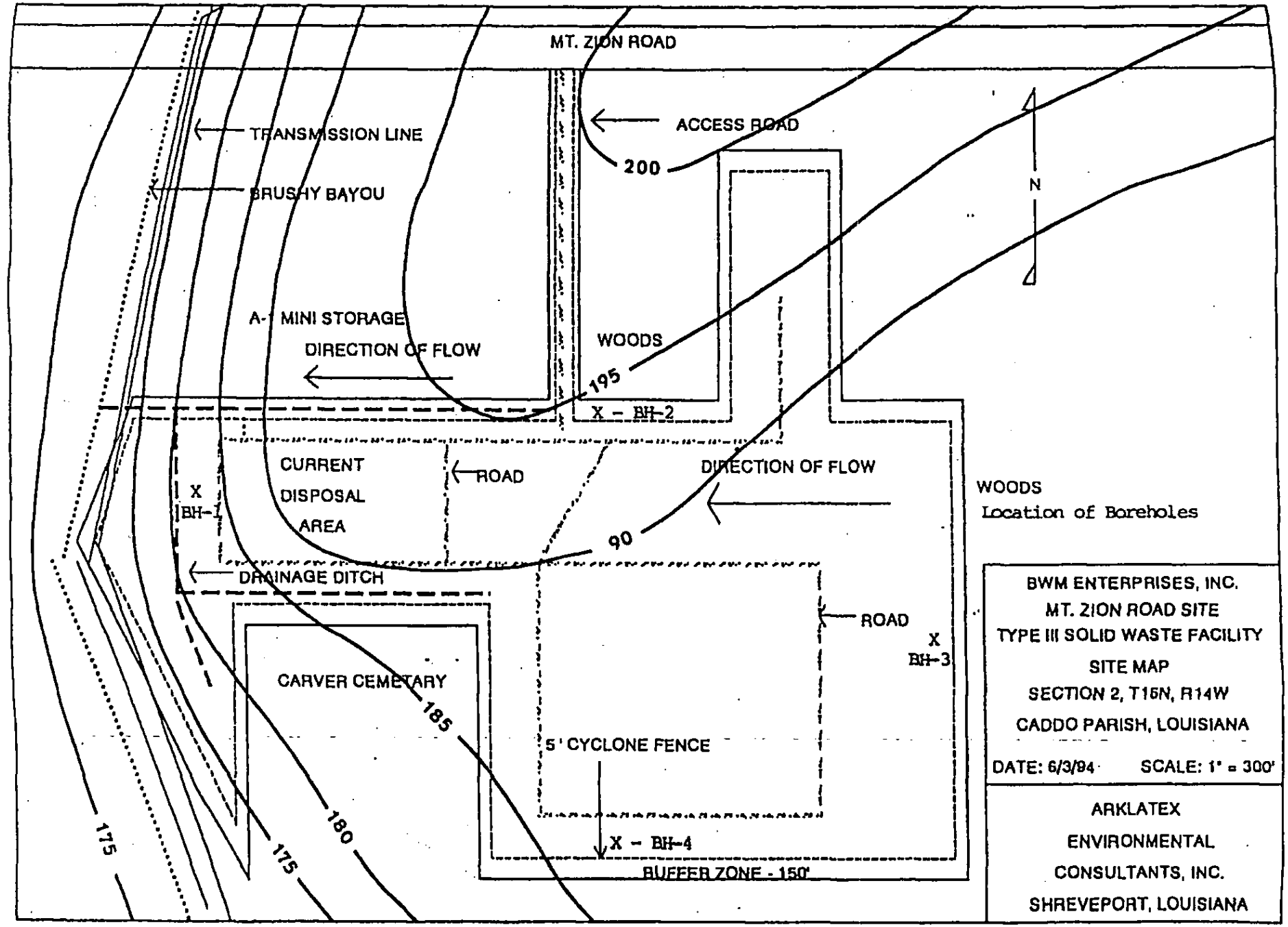
24'

26'

* DENOTES WATER-SATURATED SAMPLE

BOREHOLE DEPTH: 15'

FIELD OBSERVATIONS: Located on south line of facility


MT. ZION ROAD
TRANSMISSION LINE
BRUSHY BAYOU
ACCESS ROAD
200
N
A-1 MINI STORAGE
DIRECTION OF FLOW
WOODS
195
X - BH-2
CURRENT
DISPOSAL
AREA
ROAD
DIRECTION OF FLOW
X
BH-1
WOODS
Location of Boreholes
90
DRAINAGE DITCH
ROAD
X
BH-3
CARVER CEMETARY
185
5' CYCLONE FENCE
180
175
175
X - BH-4
BUFFER ZONE - 150'
BWM ENTERPRISES, INC.
MT. ZION ROAD SITE
TYPE III SOLID WASTE FACILITY
SITE MAP
SECTION 2, T15N, R14W
CADDO PARISH, LOUISIANA
DATE: 6/3/94
SCALE: 1" = 300'
ARKLATEX
ENVIRONMENTAL
CONSULTANTS, INC.
SHREVEPORT, LOUISIANA

LOG OF BORING

PROJECT: 050714
CLIENT:

BORING NO: B-3
LOCATION: SPKD, LA

Date: 5-31-05 Type: Auger Ground Elevation:

Legend: ■ Sample X Penetration ▼ Water

Depth, Feet	Symbol	Sample	Description of Stratum
			BR SACL w/ GRVL, ASPHALT
			BR SA CL w/ GRVL + ASPHALT
5			BR SA CL w/ GRVL
			ALT. LAYERS GR SA + SA CL
			GR SA
10			
			GR SA
15			
			GR SA
20			
			GR SA
25			
			B.H. 25'
30			NO @ 6'
35			
40			
45			
50			

LOG OF BORING

PROJECT: 050714
CLIENT:

BORING NO: B-4
LOCATION: S. Parr. 4

Date: 5-9-05 Type: Auger Ground Elevation:

Legend: ■ Sample X Penetration ▼ Water

Depth, Feet	Symbol	Sample	Description of Stratum
			BR+TAN S: CL w/ concrete
			BR CL SA w/ CONCRETE
5			BR CL SA w/ CONCRETE
			GR SA CL w/ ORGANICS
10			GR SA CL
15			GR SA
20			GR SA
25			GR SA CL
			B.H. 25'
30			H2O @ 8'
35			
40			
45			
50			

MAXIM TECHNOLOGIES, INC

LOG OF BORING

PROJECT: 050714
CLIENT:

BORING NO: B-2
LOCATION: S. Port, LA

Date: 5-31-05

B-57
Type: Auger

Ground Elevation:

Legend: ■ Sample X Penetration ▼ Water

Depth, Feet	Symbol	Sample	Description of Stratum
			BR SICL
			BR SICL TO BR CL
5			BR + GR CL SA
		X	BR + GR CL SA
			BR + GR CL SA
10			
			BR + GR SACL
15			
			BR + GR CL SA
20			
			GR SACL
25			
			B.H. 25'
30			
			no H_2O
35			
40			
45			
50			

LOG OF BORING

PROJECT: 050714
CLIENT:

BORING NO: B-5
LOCATION: S. PORT, LA

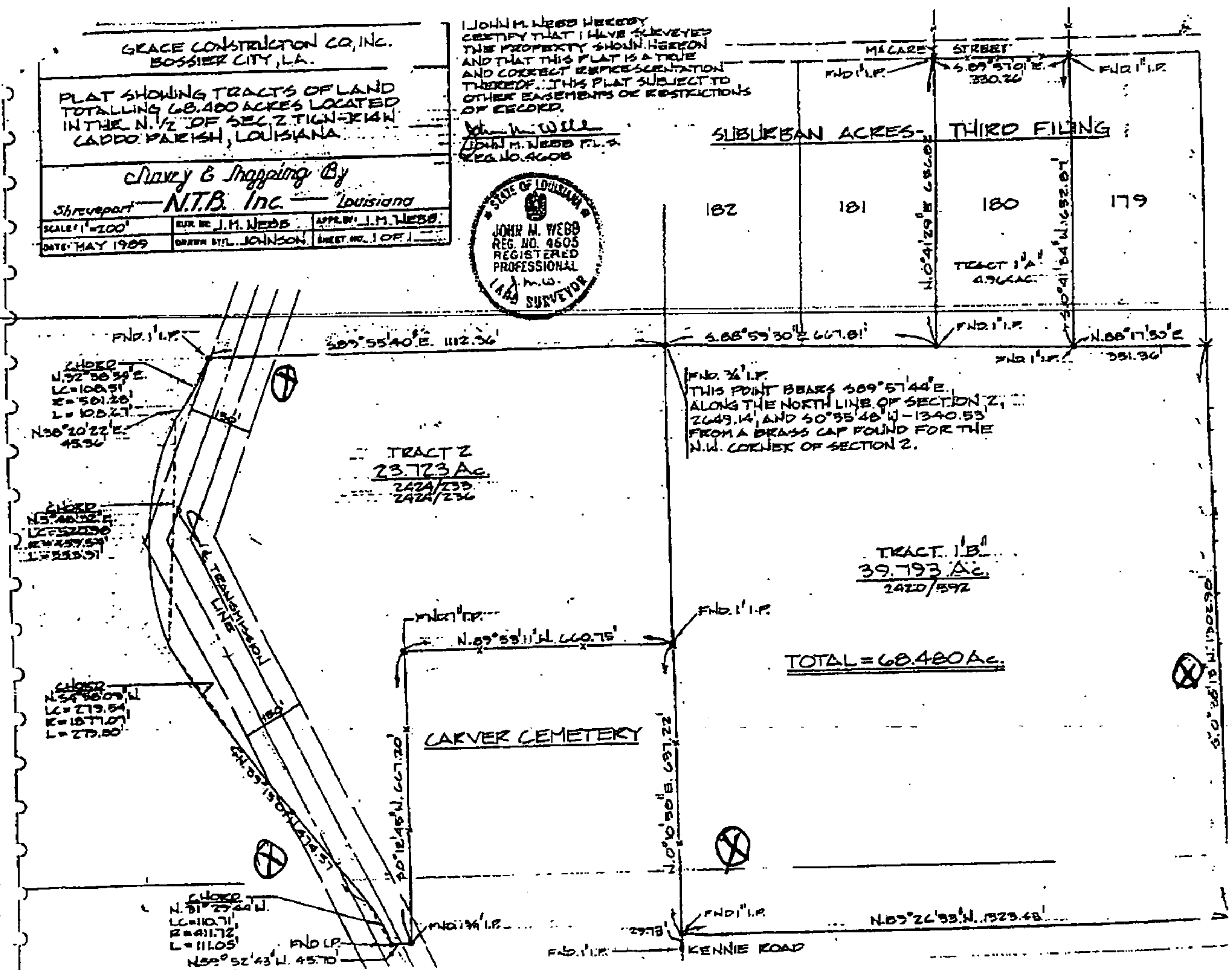
B-57

Date: 5-31-05 Type: Mud Rotary Ground Elevation:

Legend: ■ Sample X Penetration ▼ Water

Depth, Feet	Symbol	Sample	Description of Stratum
			BR SLT + SA CL
			BR + GR SA
5			BR + GR SA
			BR CL SA
			LAMINATED GR SA CL
10			
			GR CL SA
15			
			GR CL SA
20			
			GR SA
25			
			B.H. 25'
			H_2O @ 22½'
30			
35			
40			
45			
50			

MAXIM TECHNOLOGIES, INC


GRACE CONSTRUCTION CO., INC.
BOSSIER CITY, LA.
PLAT SHOWING TRACTS OF LAND TOTALLING 68.400 ACRES LOCATED IN THE N. 1/2 OF SEC. 2 T16N-R14W CADDO PARISH, LOUISIANA
Survey & Mapping By
Shreveport — N.T.B. Inc. — Louisiana
SCALE: 1"=100'
DATE: MAY 1989
SUR. BY: J.M. WEBB
DRAWN BY: L. JOHNSON
APPR. BY: J.M. WEBB
SHEET NO. 1 OF 1
I JOHN M. WEBB HEREBY CERTIFY THAT I HAVE SURVEYED THE PROPERTY SHOWN HEREON AND THAT THIS PLAT IS A TRUE AND CORRECT REPRESENTATION THEREOF. THIS PLAT SUBJECT TO OTHER EASEMENTS OR RESTRICTIONS OF RECORD.
JOHN M. WEBB P.L.S.
REG. NO. 4605
STATE OF LOUISIANA
JOHN M. WEBB
REG. NO. 4605
REGISTERED
PROFESSIONAL
LAND SURVEYOR
McLARE STREET
SUBURBAN ACRES - THIRD FILING
182
181
180
179
TRACT 1"A"
4.964 AC.
S.89°57'01"E. 330.26'
N.0°41'29"E. 659.02'
S.0°41'54"W. 652.07'
FND 1" I.P.
S.89°55'40"E. 1112.36'
S.88°59'30"E. 667.81'
N.88°17'30"E. 351.36'
FND. 3/4" I.P.
THIS POINT BEARS S89°57'44"E. ALONG THE NORTH LINE OF SECTION 2, 2649.14' AND S0°35'48"W - 1340.53' FROM A BRASS CAP FOUND FOR THE N.W. CORNER OF SECTION 2.
TRACT 2
23.723 Ac.
2424/235
2424/236
TRACT "1B"
39.793 Ac.
2420/592
TOTAL = 68.480 Ac.
N.89°59'11"W. 660.75'
CARVER CEMETERY
N.0°12'45"W. 667.20'
N.0°10'50"E. 697.22'
S.0°26'18"W. 1302.90'
N.89°26'33"W. 1523.48'
KENNIE ROAD
29.78'
CHORD N.32°58'39"E. LC=108.51' R=501.28' L=108.27'
N.38°20'22"E. 45.36'
CHORD N.5°48'32"E. LC=520.90 R=437.59 L=555.91
TRANSMISSION LINE
150'
CHORD N.54°36'07"W. LC=279.54' R=1877.07' L=279.80'
S.N.59°13'50"W. 474.57'
CHORD N.51°29'40"W. LC=110.71' R=411.72' L=111.05'
N.59°52'43"W. 45.70'
FND I.P.
FND. 3/4" I.P.

BA
P.
80

Grace Construction Co.
Hyway 80 East
Bossier City, LA 71111

September 25, 2007

Michael Harrelson
318-286-6882

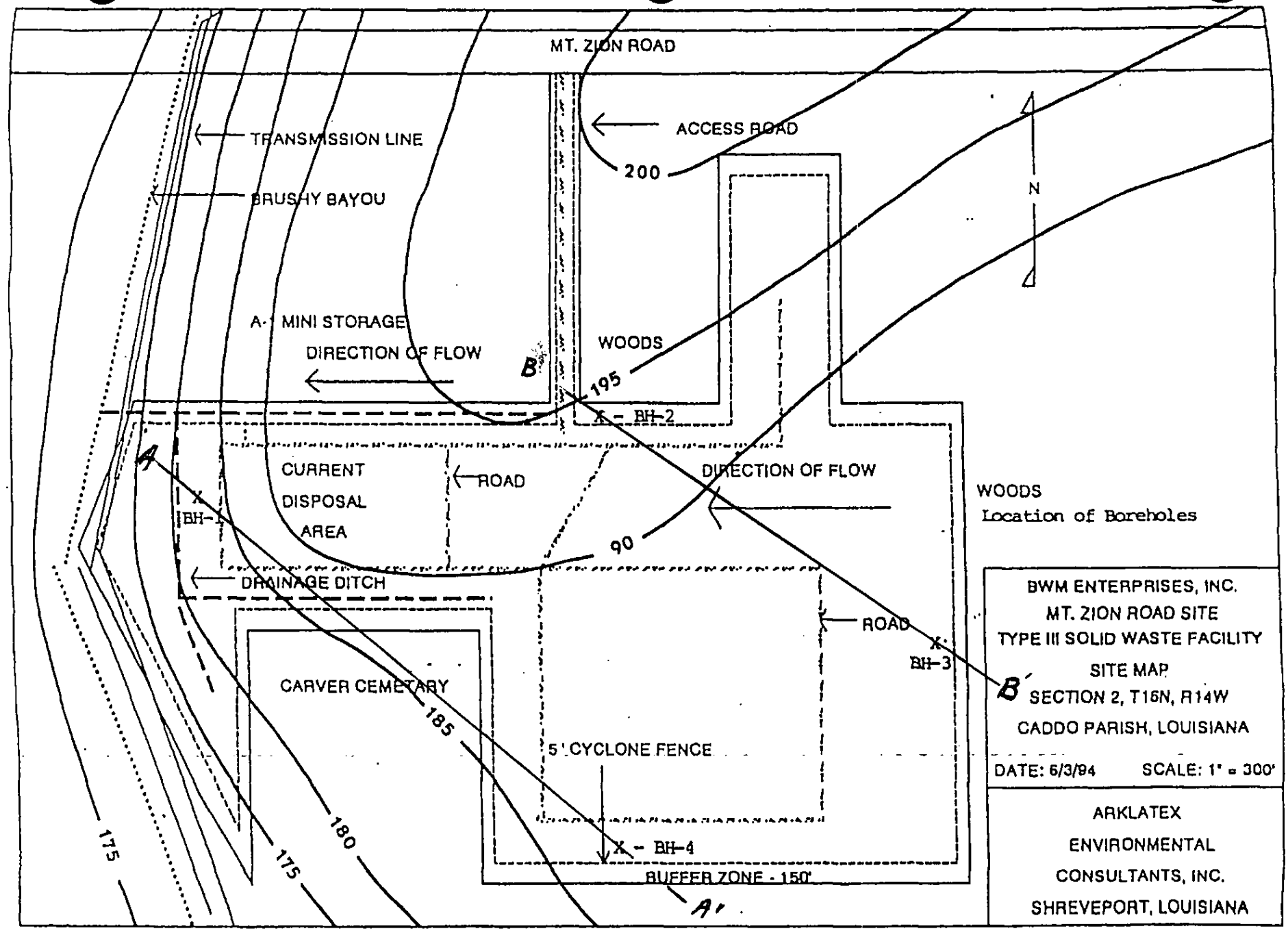
"Sometime in the fall of 1998, Grace Construction was contracted to construct the Home Depot near the intersection of Bert Kouns and I-49. At the beginning of that construction the dirt contractor, Chanler Bros., was to remove many yards of fat clay (10 to the minus 7 and greater).

Grace contracted Chanler to bring and dispose of that clay at the Mt. Zion landfill for the purpose of lining the landfill. There was so much clay, that it had to be daily dozed into place, or there would have not been enough room to store it.

Therefore Grace put a man and machine on site to place the clay. In three months time, the clay was in place on the entire site at a thickness of 1 foot +. The LDEQ inspector at that time was notified by phone by Chris Hickman that work had been completed. That was the end of the matter."

Respectfully,

Ben Thomas
Owner
Grace Construction Co.


MT. ZION ROAD
TRANSMISSION LINE
BRUSHY BAYOU
ACCESS ROAD
200
N
A-1 MINI STORAGE
DIRECTION OF FLOW
B
WOODS
195
X - BH-2
A
CURRENT
DISPOSAL
AREA
ROAD
DIRECTION OF FLOW
WOODS
Location of Boreholes
X
BH-1
90
DRAINAGE DITCH
ROAD
X
BH-3
B'
CARVER CEMETARY
185
5' CYCLONE FENCE
175
180
175
X - BH-4
BUFFER ZONE - 150'
A'
BWM ENTERPRISES, INC.
MT. ZION ROAD SITE
TYPE III SOLID WASTE FACILITY
SITE MAP
SECTION 2, T16N, R14W
CADDO PARISH, LOUISIANA
DATE: 6/3/94
SCALE: 1" = 300'
ARKLATEX
ENVIRONMENTAL
CONSULTANTS, INC.
SHREVEPORT, LOUISIANA

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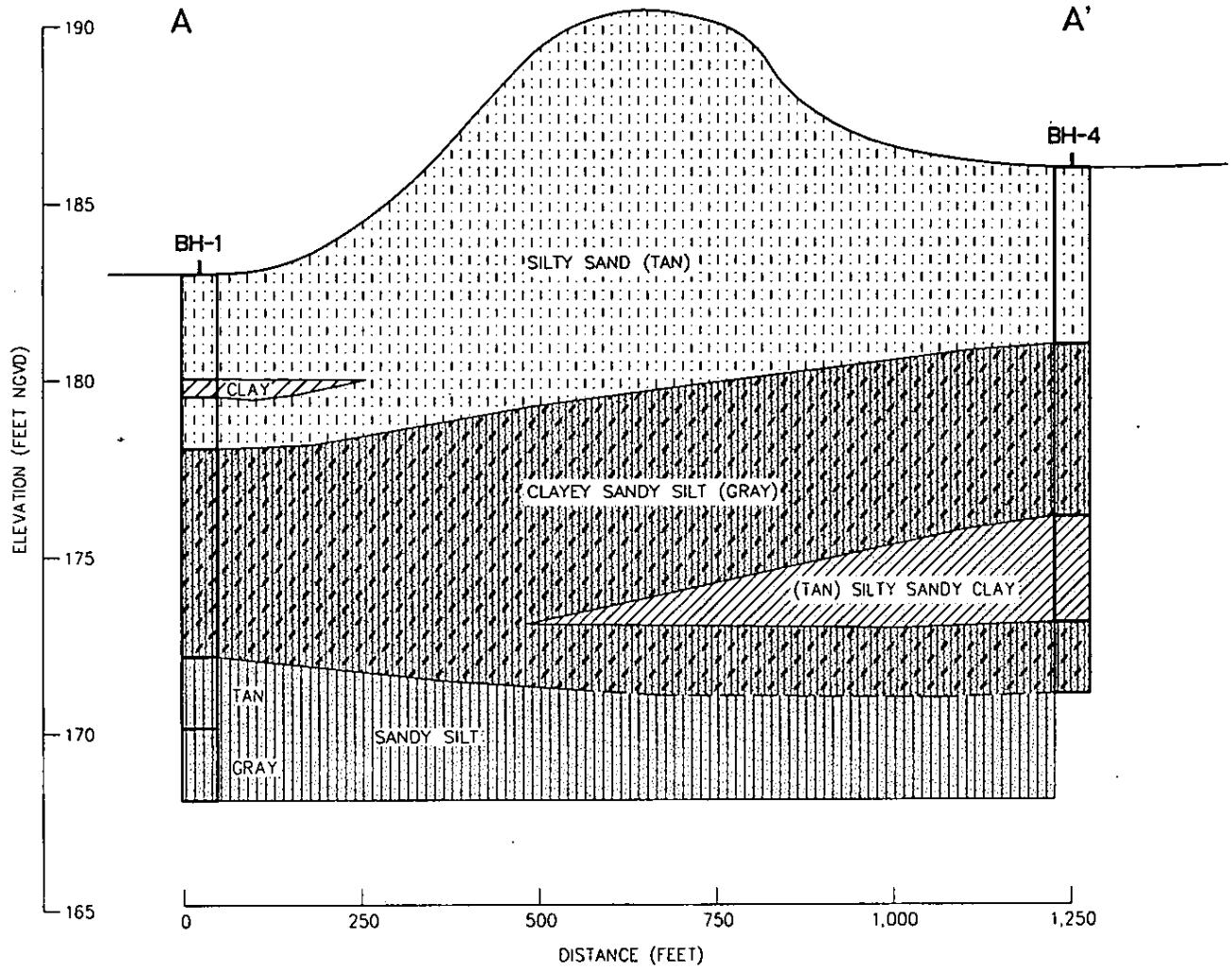
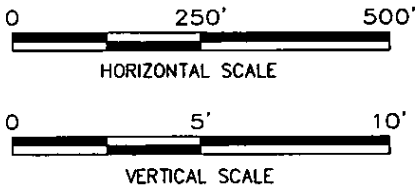




EXPLANATION

- SILTY SAND
- SAND
- CLAYEY SAND
- CLAYEY SILT
- CLAY
- SANDY SILT
- SILT

NOTES:
1. EXCAVATION OF THE SOIL IS NOT PLANNED.
2. GROUNDWATER WAS NOT ENCOUNTERED.

DRAWN BY: S. MEN	CHECKED: GHC
PROJECT MANAGER: GHC	DEPARTMENT MANAGER: GHC
DATE: 2007	TASK/PHASE NUMBER: 0001

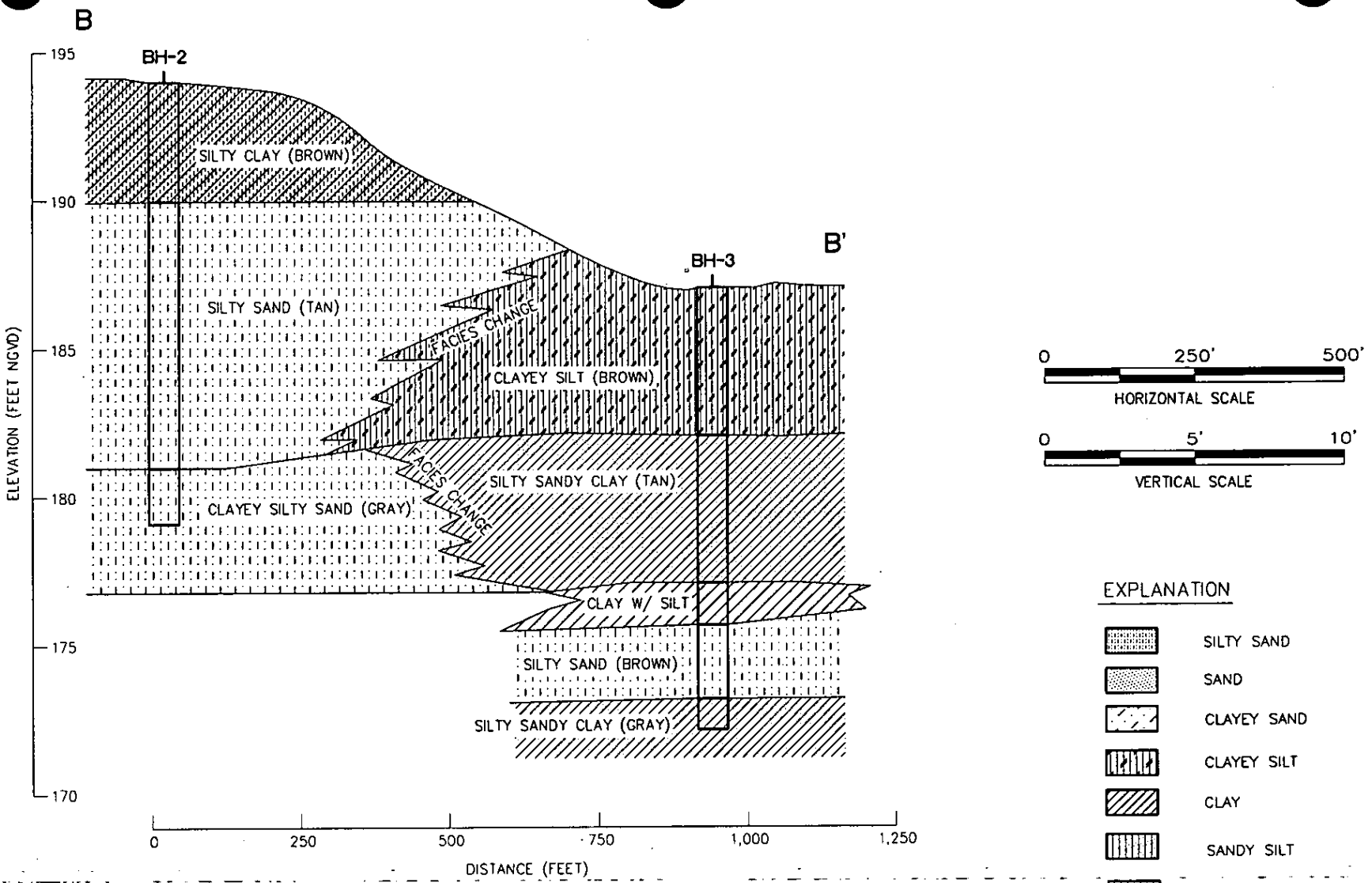
ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004
FAX: 225-218-9677
WWW.ARCADIS-US.COM

CROSS SECTION A-A'

Harrelson Materials

PROJECT NUMBER: LA002706.0001

DRAWING NUMBER: 1



EXPLANATION

- SILTY SAND
- SAND
- CLAYEY SAND
- CLAYEY SILT
- CLAY
- SANDY SILT
- SILT

NOTES:
1. EXCAVATION OF THE SOIL IS NOT PLANNED.
2. GROUNDWATER WAS NOT ENCOUNTERED.

DRAWN BY: S. MEN	CHECKED: GHC
PROJECT MANAGER: GHC	DEPARTMENT MANAGER: GHC
DATE: 2007	TASK/PHASE NUMBER: 0001

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004
FAX: 225-218-9677
WWW.ARCADIS-US.COM

CROSS SECTION B-B'

Harrelson Materials

PROJECT NUMBER: LA002706.0001

DRAWING NUMBER: 2

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SAMPLE / CORE LOG

Boring/Well: B-1 Project No.: HMM-Mt. Zion/LA002706.0001.00001

Site Location: Shreveport, Louisiana Drilling Started: 4/2/08 0818 Drilling Completed: 4/2/08 1012

Land-Surface Elev.: NA Surveyed: NA Estimated: ____ Datum: NA

Drilling Fluid: None Drilling Method Used: Hollow Stem

Drilling Contractor: PSI Driller: Mike Helper: Casey

Prepared By: G. Cook Hammer Weight: 120 Hammer Drop (inches): 30

Fill | Silty Clay | Silt | Sandy Silt | Silty Sand | Shelby Tube | Water First Encountered
Clay | Sandy Clay | Clayey Silt | Sand | Clayey Sand | Split Spoon | Water Level After 10 Minutes

SAMPLE DEPTH (ft)	SAMPLE TYPE	RECOVERY (ft)	SYMBOL	VISUAL DESCRIPTION	USCS (LL/PL/PI)	PP H	PP V	OVM (wo/F) (ppm)	REMARKS
0				FILL: Fill material, gravel, shell fragments, brown, some slity clay and silt		9			
1		0.5				11			
2						13			Poor Recovery
3				SILTY SAND: Dark, gray-black, some clay and silt					
4		0.5				11			Poor Recovery
5				FILL: Concrete		6			
6		0.5				13			Poor Recovery
7				SILTY CLAY: Dark gray (3-inch layer)		3			
8		0.5				5			Poor Recovery
9				FILL: Concrete and wood		43			
10		0.5		- some sandy clay		14			Poor Recovery
11						12			
12						18			
13				SANDY CLAY: Dark gray, some silt		7			Poor Recovery
14		0.5				7			
15						5			
16									
17									
18				SILTY SAND: Gray-dark gray, very fine grain, wet					
19		0.5				3			Poor Recovery
20						16			
21						23			
22									
23				SILTY SAND: Gray, very fine grain, trace of clay, wet					
24						15			
25						31			
						42			
						25			
						40			

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SAMPLE / CORE LOG

Boring/Well: B-1 Project No.: HMM-Mt. Zion/LA002706.0001.00001

Site Location: Shreveport, Louisiana Drilling Started: 4/2/08 0818 Drilling Completed: 4/2/08 1012

Land-Surface Elev.: NA Surveyed: NA Estimated: ____ Datum: NA

Drilling Fluid: None Drilling Method Used: Hollow Stem

Drilling Contractor: PSI Driller: Mike Helper: Casey

Prepared By: G. Cook Hammer Weight: 120 Hammer Drop (inches): 30

Fill | Silty Clay | Silt | Sandy Silt | Silty Sand | Shelby Tube | Water First Encountered
Clay | Sandy Clay | Clayey Silt | Sand | Clayey Sand | Split Spoon | Water Level After 10 Minutes

SAMPLE DEPTH (ft)	SAMPLE TYPE	RECOVERY (ft)	SYMBOL	VISUAL DESCRIPTION	USCS (LL/PL/PI)	PP H	PP V	OVM (wo/F) (ppm)	REMARKS
26						42			
27									
28									
29		1.0		SILTY SAND: Gray, very fine to fine grain, wet		33			
30				- Total Depth 30 ft bls		6			
31									
32									
33									
34									
35									
36									
37									
38									
39									
40									
41									
42									
43									
44									
45									
46									
47									
48									
49									
50									

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SAMPLE / CORE LOG

ring/Well: B-2 Project No.: HMM-Mt. Zion/LA002706.0001.00001

Site Location: Shreveport, Louisiana Drilling Started: 4/3/08 1058 Drilling Completed: 4/3/08 1249

Land-Surface Elev.: NA Surveyed: NA Estimated: ____ Datum: NA

Drilling Fluid: None Drilling Method Used: Hollow Stem

Drilling Contractor: PSI Driller: Mike Helper: Casey

Prepared By: G. Cook Hammer Weight: 120 Hammer Drop (inches): 30

Fill | Silty Clay | Silt | Sandy Silt | Silty Sand | Shelby Tube | Water First Encountered
Clay | Sandy Clay | Clayey Silt | Sand | Clayey Sand | Split Spoon | Water Level After 10 Minutes

SAMPLE DEPTH (ft)	SAMPLE TYPE	RECOVERY (ft)	SYMBOL	VISUAL DESCRIPTION	USCS (LL/PL/PI)	PP H	PP V	OVM (wo/F) (ppm)	REMARKS
0				Drilled with hollow stem down to 4 ft before sampling.					
4				FILL: (Road bed) Gravel, slity sand, some, clay					
5		0.25				2			No Sample
6						3			
7		0.25				2			No Sample
8				SILTY SAND: Light gray, trace of clay, very fine grain		2			
9		0.25		- wet		2			▽
10						2			
11						3			
13				SILTY SAND: Brownish gray, very fine grain, saturated					
14		1.0				5			
15						6			
16						10			
18				SILTY SAND: Brownish gray, very fine-fine grain, saturated					
19		1.0				7			
20						12			
21						15			
23				SILTY SAND: Brownish gray, very fine-fine grain, saturated		4			
24		1.0				10			
25				- Total Depth 25 ft. Augers keep getting sand locked		14			

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SAMPLE / CORE LOG

Boring/Well: B-3 Project No.: HMM-Mt. Zion/LA002706.0001.00001

Site Location: Shreveport, Louisiana Drilling Started: 4/2/08 1220 Drilling Completed: 4/2/08 1358

Land-Surface Elev.: NA Surveyed: NA Estimated: ____ Datum: NA

Drilling Fluid: None Drilling Method Used: Hollow Stem

Drilling Contractor: PSI Driller: Mike Helper: Casey

Prepared By: G. Cook Hammer Weight: 120 Hammer Drop (inches): 30

Fill | Silty Clay | Silt | Sandy Silt | Silty Sand | Shelby Tube | Water First Encountered
Clay | Sandy Clay | Clayey Silt | Sand | Clayey Sand | Split Spoon | Water Level After 10 Minutes

SAMPLE DEPTH (ft)	SAMPLE TYPE	RECOVERY (ft)	SYMBOL	VISUAL DESCRIPTION	USCS (LL/PL/PI)	PP H	PP V	OVM (wo/F) (ppm)	REMARKS
0									
1		0.75		SANDY CLAY: Sandy clay and fill		4			
2				- Drilled from 2 ft to 13 ft with hollow stem through debris. No samples.		8			
3						30			
4									
5									
6									
7									
8									
9									
10									
11									
12									
13				FILL: Wood					
14									No Sample
15									
16									
17									
18									
19		0				2			No Recovery
20						1			
21						2			
22									
23				SANDY CLAY: Dark gray, trace of very fine grain sand, trace of debris		1			
24		0.75		- wet		2			▽
25						6			

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SAMPLE / CORE LOG

Boring/Well: B-3 Project No.: HMM-Mt. Zion/LA002706.0001.00001

Site Location: Shreveport, Louisiana Drilling Started: 4/2/08 1220 Drilling Completed: 4/2/08 1358

Land-Surface Elev.: NA Surveyed: NA Estimated: ____ Datum: NA

Drilling Fluid: None Drilling Method Used: Hollow Stem

Drilling Contractor: PSI Driller: Mike Helper: Casey

Prepared By: G. Cook Hammer Weight: 120 Hammer Drop (inches): 30

Fill | Silty Clay | Silt | Sandy Silt | Silty Sand | Shelby Tube | Water First Encountered
Clay | Sandy Clay | Clayey Silt | Sand | Clayey Sand | Split Spoon | Water Level After 10 Minutes

SAMPLE DEPTH (ft)	SAMPLE TYPE	RECOVERY (ft)	SYMBOL	VISUAL DESCRIPTION	USCS (LL/PL/PI)	PP H	PP V	OVM (wo/F) (ppm)	REMARKS
28		1.0		SILTY CLAY: Dark gray, trace of pea gravel, black natural organic material, damp, medium					
33		1.0		SILTY SAND: Gray-brownish gray, very fine grain, trace of clay, wet		7			
34						12			
35						12			
38		1.0		SILTY SAND: Grayish tan, very fine grain, wet		5			
39						3			
40				- Total Depth 40 ft bls		8			

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SAMPLE / CORE LOG

Boring/Well: B-5 Project No.: HMM-Mt. Zion/LA002706.0001.00001

Site Location: Shreveport, Louisiana Drilling Started: 4/3/08 0922 Drilling Completed: 4/3/08 1030

Land-Surface Elev.: NA Surveyed: NA Estimated: ____ Datum: NA

Drilling Fluid: None Drilling Method Used: Hollow Stem

Drilling Contractor: PSI Driller: Mike Helper: Casey

Prepared By: G. Cook Hammer Weight: 120 Hammer Drop (inches): 30

Fill | Silty Clay | Silt | Sandy Silt | Silty Sand | Shelby Tube | Water First Encountered
Clay | Sandy Clay | Clayey Silt | Sand | Clayey Sand | Split Spoon | Water Level After 10 Minutes

SAMPLE DEPTH (ft)	SAMPLE TYPE	RECOVERY (ft)	SYMBOL	VISUAL DESCRIPTION	USCS (LL/PL/PI)	PP H	PP V	OVM (wo/F) (ppm)	REMARKS
0				Drilled with hollow stem down to 13 ft through debris					
13		0.5		SANDY CLAY: Clay and debris		4			No Sample
15						6			
						3			
18		2.0		SILTY SAND: Light gray, very fine grain, loose, damp					
23				SILTY SAND: Brown, very fine grain, saturated		5			
24						6			
25						6			

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SAMPLE / CORE LOG

Boring/Well: B-5 Project No.: HMM-Mt. Zion/LA002706.0001.00001

Site Location: Shreveport, Louisiana Drilling Started: 4/3/08 0922 Drilling Completed: 4/3/08 1030

Land-Surface Elev.: NA Surveyed: NA Estimated: ____ Datum: NA

Drilling Fluid: None Drilling Method Used: Hollow Stem

Drilling Contractor: PSI Driller: Mike Helper: Casey

Prepared By: G. Cook Hammer Weight: 120 Hammer Drop (inches): 30

Fill | Silty Clay | Silt | Sandy Silt | Silty Sand | Shelby Tube | Water First Encountered
Clay | Sandy Clay | Clayey Silt | Sand | Clayey Sand | Split Spoon | Water Level After 10 Minutes

SAMPLE DEPTH (ft)	SAMPLE TYPE	RECOVERY (ft)	SYMBOL	VISUAL DESCRIPTION	USCS (LL/PL/PI)	PP H	PP V	OVM (wo/F) (ppm)	REMARKS
26									
27									
28									
29				SILTY SAND: Light gray, very fine-fine grain, wet					
30		1.5		- Total depth 30 ft bls		7			
31						13			
32						16			
33									
34									
35									
36									
37									
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49									
50									

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SAMPLE / CORE LOG

Boring/Well: B-7 Project No.: HMM-Mt. Zion/LA002706.0001.00001

Site Location: Shreveport, Louisiana Drilling Started: 4/2/08 1435 Drilling Completed: 4/2/08 1602

Land-Surface Elev.: NA Surveyed: NA Estimated: ____ Datum: NA

Drilling Fluid: None Drilling Method Used: Hollow Stem

Drilling Contractor: PSI Driller: Mike Helper: Casey

Prepared By: G. Cook Hammer Weight: 120 Hammer Drop (inches): 30

Fill | Silty Clay | Silt | Sandy Silt | Silty Sand | Shelby Tube | Water First Encountered
Clay | Sandy Clay | Clayey Silt | Sand | Clayey Sand | Split Spoon | Water Level After 10 Minutes

SAMPLE DEPTH (ft)	SAMPLE TYPE	RECOVERY (ft)	SYMBOL	VISUAL DESCRIPTION	USCS (LL/PL/PI)	PP H	PP V	OVM (wo/F) (ppm)	REMARKS
0				Drilled to 18 ft with hollow stem through debris. No samples.					
18				FILL: Wood and roof shingles					
19		1.0							No Sample
23				FILL: Wood and roof shingles					
24		1.0							No Sample

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SAMPLE / CORE LOG

Boring/Well: B-7 Project No.: HMM-Mt. Zion/LA002706.0001.00001

Site Location: Shreveport, Louisiana Drilling Started: 4/2/08 1435 Drilling Completed: 4/2/08 1602

Land-Surface Elev.: NA Surveyed: NA Estimated: ____ Datum: NA

Drilling Fluid: None Drilling Method Used: Hollow Stem

Drilling Contractor: PSI Driller: Mike Helper: Casey

Prepared By: G. Cook Hammer Weight: 120 Hammer Drop (inches): 30

Fill | Silty Clay | Silt | Sandy Silt | Silty Sand | Shelby Tube | Water First Encountered
Clay | Sandy Clay | Clayey Silt | Sand | Clayey Sand | Split Spoon | Water Level After 10 Minutes

SAMPLE DEPTH (ft)	SAMPLE TYPE	RECOVERY (ft)	SYMBOL	VISUAL DESCRIPTION	USCS (LL/PL/PI)	PP H	PP V	OVM (wo/F) (ppm)	REMARKS
28–30		1.75		SANDY CLAY: Blueish gray-brownish gray, ferrous staining and nodules, black natural organic material, dry stiff					
33–35		2.0		CLAYEY SAND: Very fine-fine grain, tan, ferrous staining and nodules, slight compact, damp					
38–40		2.0		CLAYEY SAND: Very fine-fine grain, tan, ferrous staining and nodules, damp - Total Depth 40 ft bls		21 26 32			

MT. ZION ROAD C & D SITE
D-017-2819 / OU-0155
CADDO PARISH, LOUISIANA

SLOPE STABILITY ANALYSIS

Prepared for:

MT. ZION C & D, LLC

Prepared by:

ARCADIS U.S., Inc.

Slope Stability

There is evidence to suggest past episodes of surficial or mass soil movement on the property. The existing natural slope surfaces are generally well vegetated by a dense growth of natural brush. The existing slopes are up to 20 feet in vertical height and generally flatter than 4 to 1 (H:V). Based upon plans provided to ARCADIS, the proposed slopes will not exceed 20 feet in vertical height and will be no steeper than 4:1 (H:V).

Gross Stability

Stability analyses were performed along Cross Section B-B' analyzing the stability of the site for static conditions. Based upon research of available records and the division of Mines and Geology an internal angle of friction of 15 degrees and cohesion of 600 pounds per square foot were used for our purposes.

Due to the fairly flat slopes and the cohesive nature of the soils encountered, the stability analysis for slopes used was the analysis as presented in NAVFACs 7.1, Figure 2, which provided a factor of safety of 2.33, which is greater than 1.5.

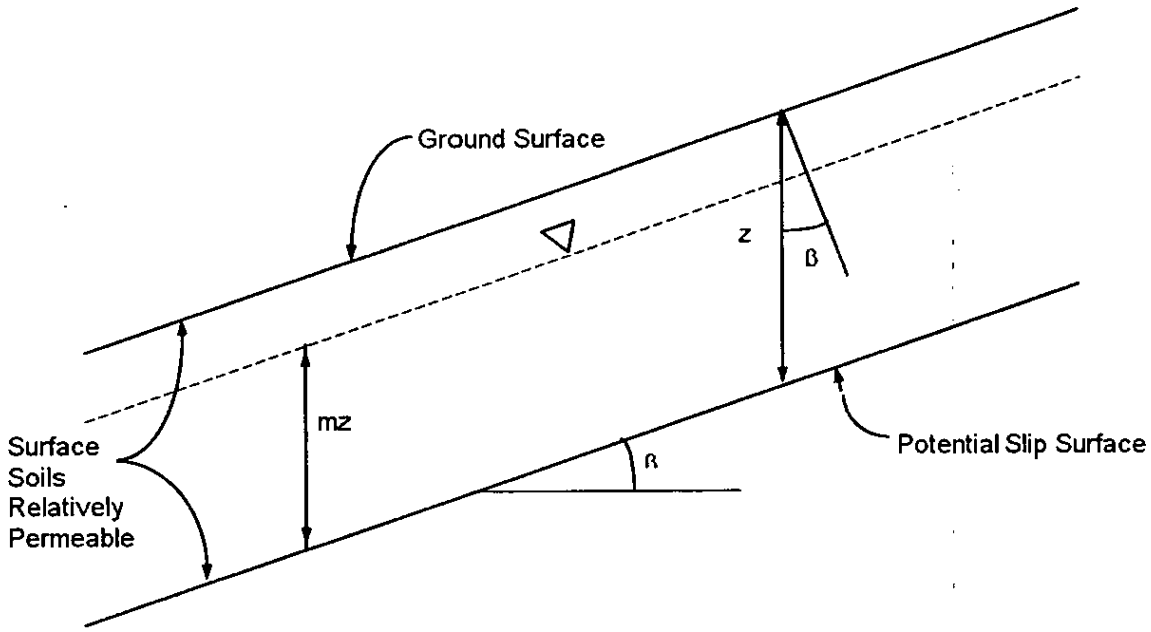
For the purpose of analysis, the geotechnical program SLOPE/W was also employed to check our assumptions and analysis. This also provided results greater than 1.5.

The slope angles and cross sections used are the most critical for the slopes analyzed. Therefore, all other slopes of flatter gradient of lesser heights or more favorable geologic conditions are considered stable. Based upon our analysis, the site's slopes exceed the minimum factor of safety of 1.5. Based upon our calculations, it is reasonable to assume the proposed slopes are grossly stable.

Surficial Stability

We have performed an analysis of the surficial stability of the proposed slopes. The analysis assumes the following conditions: A uniform planar slope; uniform soil density and shearing strength, and uniform seepage parallel to the slope. The validity of this analysis is determined in part by how closely the assumptions model the existing field conditions. The attached calculations indicate a surficial factor of safety of 1.9 for a 2 to 1 (H:V) slope. Based upon the attached surficial stability calculations, the slopes exceed the minimum requirements of a factor of safety of 1.5.

SURFICIAL SLOPE STABILITY



F.S. = Static Factor of Safety

γ	= Unit Weight of Soil	=	120	pcf
γ_w	= Unit Weight of Water	=	62.4	pcf
c	= Cohesion of Soil	=	300	psf
ϕ	= Effective Angle of Internal Friction	=	19	degree
z	= Vertical Depth of Slip Surface	=	4	
mz	= Vertical Height of Temporary Water Surface Above Slip Surface	=	1	
β	= Slope Angle	=	26.5	degrees

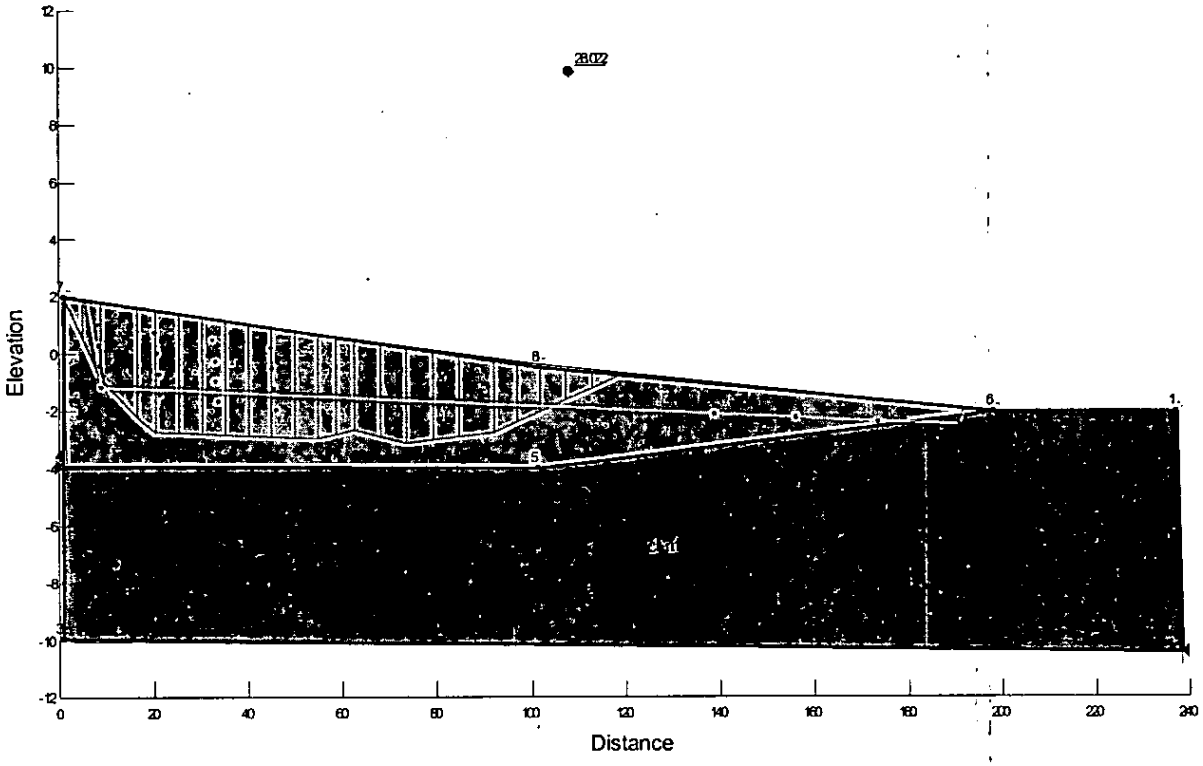
$$F.S. = \frac{c + z(\gamma - m\gamma_w)\cos^2\beta \tan\phi'}{}$$

F.S. = 1.90

Cross Sections

Stability Results Slope/ W

Sample of over 30 sections used



Approximately Four to Slope
Based upon Cross Section B-B"

Project Settings

Length(L) Units: feet
Time(t) Units: Seconds
Force(F) Units: lbf
Pressure(p) Units: psf
Strength Units: psf
Unit Weight of Water: 62.4 pcf
View: 2D

Analysis Settings

SLOPE/W Zion

Description: 4 to 1 slopes
Kind: SLOPE/W
Method: Morgenstern-Price
Settings
    Side Function
        Interslice force function option: Half-Sine
    PWP Conditions Source: (none)
SlipSurface
    Direction of movement: Left to Right
    Allow Passive Mode: No
    Slip Surface Option: Entry and Exit
    Critical slip surfaces saved: 10
    Optimize Critical Slip Surface Location: Yes
    Tension Crack
        Tension Crack Option: (none)
FOS Distribution
    FOS Calculation Option: Constant
Advanced
    Number of Slices: 30
    Optimization Tolerance: 0.01
    Minimum Slip Surface Depth: 0.1 ft
    Minimum Slice Width: 0.1 ft
    Optimization Maximum Iterations: 2000
    Optimization Convergence Tolerance: 1e-007
    Starting Optimization Points: 8
    Ending Optimization Points: 16
    Complete Passes per Insertion: 1

Materials

Natural soil

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion: 600 psf
Phi: 10 °
Phi-B: 0 °

Trash Fill

Model: Mohr-Coulomb
Unit Weight: 110 pcf
Cohesion: 300 psf
Phi: 30 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Projection: Range
Left-Zone Left Coordinate: (106.0303, 17.892449) ft
Left-Zone Right Coordinate: (185.4516, 15.500001) ft
Left-Zone Increment: 4
Right Projection: Range
Right-Zone Left Coordinate: (402.65394, 8.9571054) ft
Right-Zone Right Coordinate: (497.95003, 6.0864532) ft
Right-Zone Increment: 4
Radius Increments: 4

Slip Surface Limits

Left Coordinate: (100, 18.074103) ft
Right Coordinate: (900, 6.0247009) ft

Regions

	Material	Points	Area (ft²)
Region 1			
Region 2	Natural soil	2,3,4,5,6,7,9,8,10,11	12049.402
Region 3	Trash Fill	1,2,11,10,8,9	3313.5855

Points

	X (ft)	Y (ft)
Point 1	100	18.074103
Point 2	500	6.0247009
Point 3	600	0
Point 4	700	0
Point 5	900	6.0247009
Point 6	900	-12.049402
Point 7	100	-12.049402
Point 8	200	0
Point 9	100	0
Point 10	300	6.0247009
Point 11	480.87944	6.0247009

Critical Slip Surfaces

	Number	FOS	Center (ft)	Radius (ft)	Entry (ft)	Exit (ft)
1	Optimized	16.193	(312.263, 353.029)	141.1062	(106.03, 17.8925)	(493.734, 6.21344)
2	22	16.417	(312.263, 353.029)	393.508	(106.03, 17.8925)	(497.95, 6.08645)
3	17	16.479	(299.727, 332.657)	369.588	(106.03, 17.8925)	(474.126, 6.80412)
4	12	16.593	(287.19, 312.285)	345.667	(106.03, 17.8925)	(450.302, 7.52178)
5	47	16.665	(321.671, 335.453)	373.573	(125.886, 17.2943)	(497.95, 6.08645)
6	7	16.755	(274.654, 291.912)	321.747	(106.03, 17.8925)	(426.478, 8.23944)
7	42	16.758	(309.134, 315.08)	349.652	(125.886, 17.2943)	(474.126, 6.80412)
8	37	16.901	(296.598, 294.708)	325.731	(125.886, 17.2943)	(450.302, 7.52178)
9	72	16.941	(331.078, 317.876)	353.637	(145.741, 16.6962)	(497.95, 6.08645)
10	2	16.996	(262.117, 271.54)	297.826	(106.03, 17.8925)	(402.654, 8.95711)
11	67	17.068	(318.541, 297.504)	329.716	(145.741, 16.6962)	(474.126, 6.80412)

Slices of Slip Surface: Optimized

	Slip Surface	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
1	Optimized	112.7516	10.844345	0	704.47337	406.72789	300
2	Optimized	122.6494	1.89812	0	1649.9655	952.608	300
3	Optimized	132.81805	-4.1782115	0	2325.787	410.09899	600
4	Optimized	145.13285	-9.2796665	0	2924.854	515.73067	600
5	Optimized	155.7782	-11.126155	0	3108.0218	548.0281	600
6	Optimized	161.288	-12.0494	0	3220.3744	567.83889	600
7	Optimized	167.96	-12.0494	0	3198.8977	564.05198	600
8	Optimized	180.9298	-12.0494	0	3157.1083	556.68337	600
9	Optimized	193.70735	-12.0494	0	3115.9294	549.42243	600
10	Optimized	205.58825	-12.0494	0	3081.1104	543.2829	600
11	Optimized	216.6565	-12.0494	0	3052.1759	538.18095	600
12	Optimized	227.61655	-12.0494	0	3023.6176	533.14536	600
13	Optimized	238.5766	-12.0494	0	2994.9681	528.09368	600
14	Optimized	249.7115	-12.0494	0	2965.9417	522.97555	600
15	Optimized	261.02125	-12.0494	0	2936.3212	517.75265	600
16	Optimized	272.2301	-12.0494	0	2907.0118	512.58462	600
17	Optimized	283.33805	-12.0494	0	2877.9336	507.45734	600
18	Optimized	294.446	-12.0494	0	2848.7653	502.31419	600
19	Optimized	300.7569	-12.0494	0	2831.6613	499.29828	600
20	Optimized	306.91525	-12.0494	0	2811.7528	495.78788	600
21	Optimized	317.71815	-12.0494	0	2776.7621	489.61808	600
22	Optimized	328.521	-12.0494	0	2741.6788	483.43195	600
23	Optimized	339.45825	-12.0494	0	2706.1813	477.17277	600
24	Optimized	350.52995	-12.0494	0	2670.0531	470.8024	600
25	Optimized	361.60165	-12.0494	0	2633.8346	464.4161	600
26	Optimized	372.69545	-12.0494	0	2597.5358	458.01564	600
27	Optimized	383.81135	-12.0494	0	2561.1016	451.5913	600
28	Optimized	394.9273	-12.0494	0	2524.4874	445.13524	600
29	Optimized	406.6241	-12.0494	0	2485.8951	438.33038	600
30	Optimized	418.90175	-12.0494	0	2445.3337	431.17831	600
31	Optimized	432.47385	-12.0494	0	2400.3568	423.24766	600
32	Optimized	447.3404	-12.0494	0	2350.9169	414.53008	600
33	Optimized	456.07295	-12.0494	0	2321.8691	409.40817	600
34	Optimized	463.1001	-10.053242	0	2085.1502	367.66824	600
35	Optimized	474.5559	-6.060924	0	1560.0709	275.08259	600
36	Optimized	480.5816	-3.837178	0	1293.1061	228.00949	600
37	Optimized	487.1834	1.207555	0	656.43115	115.74652	600
38	Optimized	493.6109	6.1190715	0	25.648969	14.808439	300

Slices of Slip Surface: 22

	Slip Surface	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
1	22	114.12945	13.170725	0	471.18274	272.03748	300
2	22	130.32775	4.2245	0	1381.3262	797.50903	300
3	22	145.1723	-3.164282	0	2174.4893	383.42113	600
4	22	158.66315	-9.188982	0	2843.2468	501.34112	600
5	22	171.1738	-12.0494	0	3189.3729	562.37249	600
6	22	182.70425	-12.0494	0	3152.0804	555.79682	600
7	22	194.23475	-12.0494	0	3114.8747	549.23644	600
8	22	206.25	-12.0494	0	3079.84	543.05889	600
9	22	218.75	-12.0494	0	3047.12	537.28947	600
10	22	231.25	-12.0494	0	3014.32	531.50594	600
11	22	243.75	-12.0494	0	2981.6	525.73653	600
12	22	256.25	-12.0494	0	2948.8	519.953	600
13	22	268.75	-12.0494	0	2916	514.16948	600
14	22	281.25	-12.0494	0	2883.12	508.37184	600
15	22	293.75	-12.0494	0	2850.24	502.57421	600
16	22	306.62995	-12.0494	0	2812.2448	495.87463	600
17	22	319.8898	-12.0494	0	2769.1825	488.28159	600
18	22	333.14965	-12.0494	0	2726.0448	480.67525	600
19	22	346.40955	-12.0494	0	2682.8317	473.05562	600
20	22	359.6694	-12.0494	0	2639.5432	465.42269	600
21	22	372.92925	-12.0494	0	2596.0285	457.74986	600
22	22	386.18915	-12.0494	0	2552.5137	450.07704	600
23	22	399.449	-12.0494	0	2508.8481	442.37762	600
24	22	412.70885	-12.0494	0	2465.1071	434.6649	600
25	22	425.96875	-12.0494	0	2421.2153	426.92558	600
26	22	439.2286	-12.0494	0	2377.248	419.17297	600
27	22	452.48845	-12.0494	0	2333.13	411.39376	600
28	22	464.55865	-9.7656735	0	2050.0309	361.47576	600
29	22	475.43915	-5.0025085	0	1435.195	253.0636	600
30	22	489.357	1.7508155	0	571.20467	100.71879	600
31	22	497.8923	6.055577	0	13.616568	7.8615293	300

Slices of Slip Surface: 17

	Slip Surface	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
1	17	111.4728	14.67039	0	318.51902	183.89704	300
2	17	122.3578	8.470632	0	950.78516	548.93607	300
3	17	133.24275	2.746467	0	1531.3613	884.13185	300
4	17	145.61715	-3.1809385	0	2175.381	383.57836	600
5	17	159.48105	-9.2056385	0	2843.2777	501.34658	600
6	17	172.01085	-12.0494	0	3186.5891	561.88163	600
7	17	183.2065	-12.0494	0	3150.5037	555.51881	600
8	17	194.40215	-12.0494	0	3114.4183	549.15598	600
9	17	206.25	-12.0494	0	3080.08	543.10121	600
10	17	218.75	-12.0494	0	3047.44	537.34589	600
11	17	231.25	-12.0494	0	3014.8	531.59058	600
12	17	243.75	-12.0494	0	2982.16	525.83527	600
13	17	256.25	-12.0494	0	2949.44	520.06585	600
14	17	268.75	-12.0494	0	2916.72	514.29643	600
15	17	281.25	-12.0494	0	2883.92	508.51291	600
16	17	293.75	-12.0494	0	2851.04	502.71528	600
17	17	306.0473	-12.0494	0	2815.051	496.36944	600
18	17	318.14195	-12.0494	0	2775.7773	489.44444	600
19	17	330.2366	-12.0494	0	2736.5037	482.51944	600
20	17	342.3312	-12.0494	0	2697.0647	475.56528	600
21	17	354.42585	-12.0494	0	2657.5431	468.59654	600
22	17	366.5205	-12.0494	0	2617.9387	461.61323	600
23	17	378.6151	-12.0494	0	2578.169	454.60075	600
24	17	390.70975	-12.0494	0	2538.3166	447.5737	600
25	17	402.8044	-12.0494	0	2498.3815	440.53207	600
26	17	414.899	-12.0494	0	2458.3638	433.47586	600
27	17	426.99365	-12.0494	0	2418.2633	426.40507	600
28	17	439.64445	-9.347855	0	2082.6311	367.22405	600
29	17	452.8514	-3.6395778	0	1345.4092	237.23194	600
30	17	466.05835	2.6959277	0	534.46598	94.240773	600
31	17	473.3939	6.4144085	0	56.046837	32.358656	300

Slices of Slip Surface: 12

	Slip Surface	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
1	12	111.5232	14.650475	0	320.63578	185.11916	300
2	12	122.509	8.4314795	0	954.74142	551.22021	300
3	12	133.4948	2.7272295	0	1532.9363	885.04117	300
4	12	146.14985	-3.2018985	0	2176.2698	383.73508	600
5	12	160.47415	-9.2265985	0	2842.9413	501.28726	600
6	12	173.03025	-12.0494	0	3183.0135	561.25117	600
7	12	183.81815	-12.0494	0	3148.345	555.13818	600
8	12	194.60605	-12.0494	0	3113.7692	549.04153	600
9	12	205.55555	-12.0494	0	3082.0503	543.44863	600
10	12	216.66665	-12.0494	0	3053.1603	538.35454	600
11	12	227.77775	-12.0494	0	3024.2703	533.26045	600
12	12	238.88885	-12.0494	0	2995.3803	528.16636	600
13	12	250	-12.0494	0	2966.4903	523.07228	600
14	12	261.11115	-12.0494	0	2937.5103	517.96232	600
15	12	272.22225	-12.0494	0	2908.5303	512.85236	600
16	12	283.33335	-12.0494	0	2879.4603	507.72654	600
17	12	294.44445	-12.0494	0	2850.3903	502.60071	600
18	12	305.93025	-12.0494	0	2816.5737	496.63793	600
19	12	317.79075	-12.0494	0	2778.1267	489.8587	600
20	12	329.65125	-12.0494	0	2739.5955	483.06461	600
21	12	341.51175	-12.0494	0	2700.98	476.25564	600
22	12	353.3723	-12.0494	0	2662.1958	469.41695	600
23	12	365.23285	-12.0494	0	2623.243	462.54852	600
24	12	377.09335	-12.0494	0	2584.2059	455.66523	600
25	12	388.95385	-12.0494	0	2545.0845	448.76706	600
26	12	400.81435	-12.0494	0	2505.7944	441.83917	600
27	12	411.8357	-10.080887	0	2264.9411	399.37023	600
28	12	422.0179	-5.9554515	0	1729.6479	304.98359	600
29	12	432.2001	-1.4453642	0	1148.4098	202.49564	600
30	12	442.3823	3.4662503	0	520.13012	91.712974	600
31	12	448.8877	6.77324	0	98.467786	56.850403	300

Slices of Slip Surface: 47

	Slip Surface	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
1	47	131.1161	14.191885	0	306.51659	176.96744	300
2	47	141.57715	8.2108815	0	916.70742	529.26128	300
3	47	152.0382	2.6661665	0	1479.5182	854.20025	300
4	47	164.092	-3.1751875	0	2114.6958	372.87793	600
5	47	177.7386	-9.1998875	0	2783.3225	490.77486	600
6	47	192.28095	-12.0494	0	3119.9395	550.12951	600
7	47	206.25	-12.0494	0	3078.56	542.83319	600
8	47	218.75	-12.0494	0	3045.84	537.06377	600
9	47	231.25	-12.0494	0	3013.04	531.28025	600
10	47	243.75	-12.0494	0	2980.32	525.51083	600
11	47	256.25	-12.0494	0	2947.6	519.74141	600
12	47	268.75	-12.0494	0	2914.88	513.97199	600
13	47	281.25	-12.0494	0	2882.08	508.18846	600
14	47	293.75	-12.0494	0	2849.28	502.40494	600
15	47	306.1069	-12.0494	0	2813.1271	496.03021	600
16	47	318.3207	-12.0494	0	2773.5817	489.05729	600
17	47	330.5345	-12.0494	0	2733.9544	482.06993	600
18	47	342.7483	-12.0494	0	2694.2453	475.06814	600
19	47	354.9621	-12.0494	0	2654.4543	468.05191	600
20	47	367.1759	-12.0494	0	2614.4995	461.0068	600
21	47	379.3897	-12.0494	0	2574.5447	453.9617	600
22	47	391.6035	-12.0494	0	2534.5081	446.90216	600
23	47	403.81735	-12.0494	0	2494.3077	439.81374	600
24	47	416.0312	-12.0494	0	2454.0254	432.71089	600
25	47	428.245	-12.0494	0	2413.6613	425.5936	600
26	47	440.4588	-12.0494	0	2373.1334	418.44744	600
27	47	452.6726	-12.0494	0	2332.6055	411.30128	600
28	47	464.3045	-9.766648	0	2050.3513	361.53225	600
29	47	475.35445	-4.9897845	0	1433.4709	252.7596	600
30	47	489.357	1.764514	0	569.15136	100.35674	600
31	47	497.8923	6.055577	0	13.465863	7.7745198	300

Slices of Slip Surface: 7

	Slip Surface	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
1	7	111.58305	14.62689	0	323.17755	186.58665	300
2	7	122.68855	8.385156	0	959.51543	553.97649	300
3	7	133.79405	2.704491	0	1535.1287	886.30698	300
4	7	144.31635	-2.2022715	0	2064.509	364.02864	600
5	7	154.2555	-6.4101815	0	2530.6842	446.22791	600
6	7	164.19465	-10.23261	0	2951.4793	520.42543	600
7	7	174.3035	-12.0494	0	3178.8376	560.51483	600
8	7	184.5821	-12.0494	0	3145.9537	554.71652	600
9	7	194.8607	-12.0494	0	3113.1672	548.93537	600
10	7	205.55555	-12.0494	0	3082.4103	543.5121	600
11	7	216.66665	-12.0494	0	3053.7003	538.44975	600
12	7	227.77775	-12.0494	0	3024.9903	533.38741	600
13	7	238.88885	-12.0494	0	2996.1903	528.30919	600
14	7	250	-12.0494	0	2967.4803	523.24684	600
15	7	261.11115	-12.0494	0	2938.5903	518.15275	600
16	7	272.22225	-12.0494	0	2909.7003	513.05867	600
17	7	283.33335	-12.0494	0	2880.7203	507.94871	600
18	7	294.44445	-12.0494	0	2851.6503	502.82288	600
19	7	305.009	-12.0494	0	2820.831	497.38861	600
20	7	315.02695	-12.0494	0	2788.3893	491.66826	600
21	7	325.0449	-12.0494	0	2755.8477	485.93031	600
22	7	335.0629	-12.0494	0	2723.2064	480.17476	600
23	7	345.08085	-12.0494	0	2690.4652	474.40161	600
24	7	355.0988	-12.0494	0	2657.6242	468.61086	600
25	7	365.1168	-12.0494	0	2624.6834	462.80251	600
26	7	375.13475	-12.0494	0	2591.543	456.95895	600
27	7	385.4089	-10.118653	0	2357.6015	415.70876	600
28	7	395.9393	-6.0446765	0	1827.4539	322.22944	600
29	7	406.4697	-1.5363502	0	1245.2367	219.56883	600
30	7	417.0001	3.4267238	0	609.32406	107.44027	600
31	7	424.37165	7.1320715	0	140.8791	81.336588	300

Slices of Slip Surface: 42

	Slip Surface	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
1	42	131.1613	14.174015	0	308.40903	178.06004	300
2	42	141.71265	8.1757285	0	920.27756	531.32249	300
3	42	152.26395	2.6488835	0	1480.9463	855.02475	300
4	42	164.57295	-3.194562	0	2115.5778	373.03345	600
5	42	178.63965	-9.219262	0	2783.0612	490.72877	600
6	42	192.8365	-12.0494	0	3117.8871	549.76762	600
7	42	205.55555	-12.0494	0	3080.3403	543.14711	600
8	42	216.66665	-12.0494	0	3051.2703	538.02128	600
9	42	227.77775	-12.0494	0	3022.2903	532.91132	600
10	42	238.88885	-12.0494	0	2993.4003	527.81724	600
11	42	250	-12.0494	0	2964.4203	522.70728	600
12	42	261.11115	-12.0494	0	2935.4403	517.59732	600
13	42	272.22225	-12.0494	0	2906.4603	512.48737	600
14	42	283.33335	-12.0494	0	2877.3903	507.36154	600
15	42	294.44445	-12.0494	0	2848.3203	502.23572	600
16	42	306.02705	-12.0494	0	2814.3075	496.23834	600
17	42	318.08115	-12.0494	0	2775.3167	489.36321	600
18	42	330.1353	-12.0494	0	2736.2429	482.47345	600
19	42	342.18945	-12.0494	0	2697.0861	475.56906	600
20	42	354.24355	-12.0494	0	2657.8464	468.65004	600
21	42	366.29765	-12.0494	0	2618.4408	461.70177	600
22	42	378.3518	-12.0494	0	2578.9523	454.73887	600
23	42	390.40595	-12.0494	0	2539.3807	447.76134	600
24	42	402.46005	-12.0494	0	2499.6433	440.75455	600
25	42	414.51415	-12.0494	0	2459.8229	433.73314	600
26	42	426.5683	-12.0494	0	2419.8365	426.68247	600
27	42	439.27305	-9.3709585	0	2086.226	367.85794	600
28	42	452.62835	-3.6865375	0	1351.4842	238.30313	600
29	42	465.9837	2.6720715	0	537.21607	94.725688	600
30	42	473.3937	6.4144085	0	55.863319	32.252702	300

Slices of Slip Surface: 37

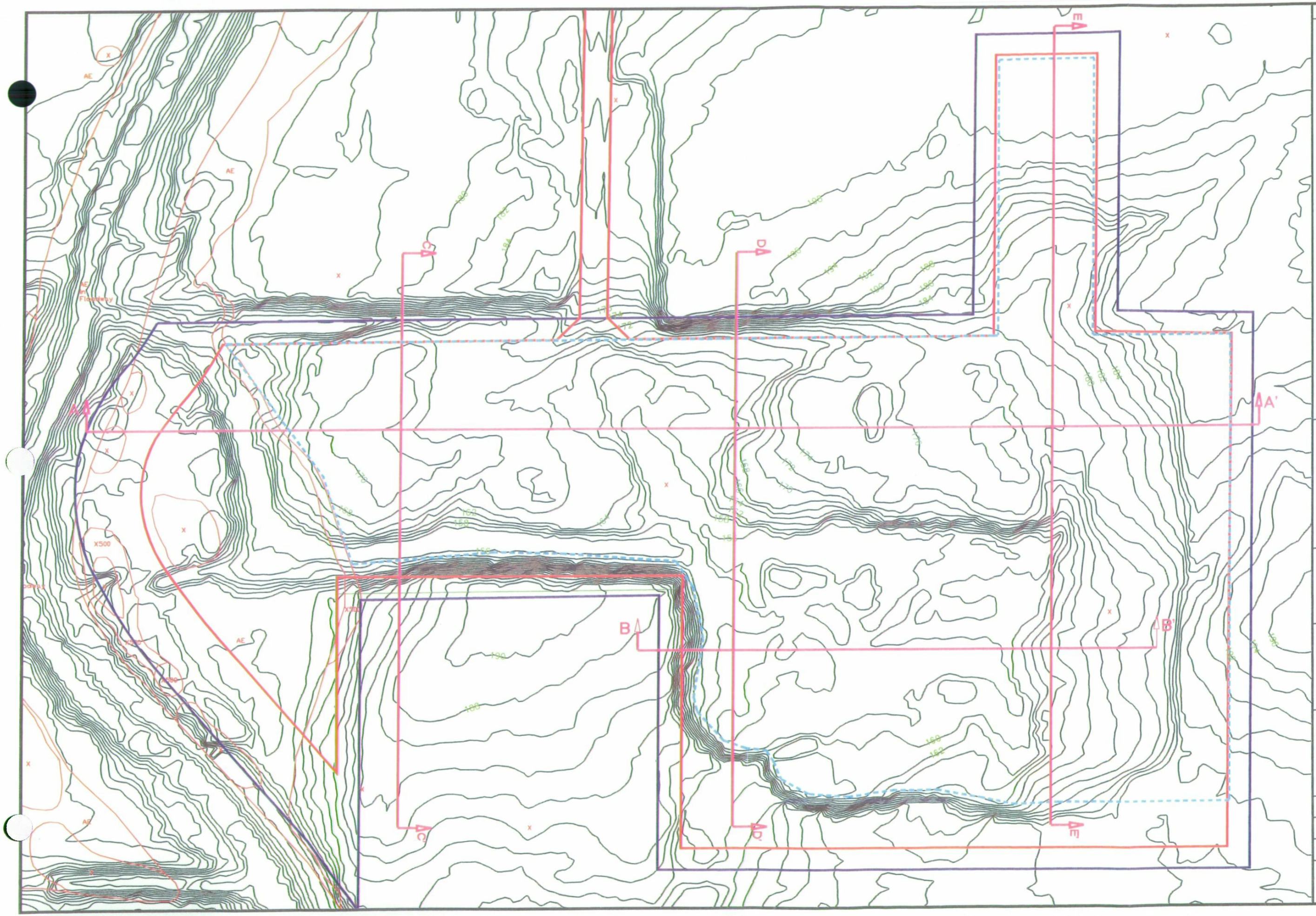
	Slip Surface	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
1	37	131.2147	14.152935	0	310.66624	179.36324	300
2	37	141.87285	8.134299	0	924.50941	533.76575	300
3	37	152.53095	2.628534	0	1482.7337	856.0567	300
4	37	162.7249	-2.1935745	0	2003.4423	353.26093	600
5	37	172.4547	-6.392927	0	2469.1405	435.37609	600
6	37	182.18445	-10.224052	0	2891.4216	509.83564	600
7	37	193.52465	-12.0494	0	3115.4421	549.3365	600
8	37	205.55555	-12.0494	0	3080.2503	543.13124	600
9	37	216.66665	-12.0494	0	3051.4503	538.05302	600
10	37	227.77775	-12.0494	0	3022.6503	532.9748	600
11	37	238.88885	-12.0494	0	2993.8503	527.89658	600
12	37	250	-12.0494	0	2965.0503	522.81837	600
13	37	261.11115	-12.0494	0	2936.1603	517.72428	600
14	37	272.22225	-12.0494	0	2907.3603	512.64606	600
15	37	283.33335	-12.0494	0	2878.3803	507.53611	600
16	37	294.44445	-12.0494	0	2849.4003	502.42615	600
17	37	305.3073	-12.0494	0	2817.817	496.85716	600
18	37	315.9219	-12.0494	0	2783.5246	490.81048	600
19	37	326.5365	-12.0494	0	2749.2322	484.76381	600
20	37	337.1511	-12.0494	0	2714.7514	478.68391	600
21	37	347.7657	-12.0494	0	2680.2706	472.60402	600
22	37	358.3803	-12.0494	0	2645.6013	466.4909	600
23	37	368.9949	-12.0494	0	2610.8379	460.36116	600
24	37	379.6095	-12.0494	0	2575.9803	454.21482	600
25	37	390.2241	-12.0494	0	2540.9342	448.03525	600
26	37	400.8387	-12.0494	0	2505.8881	441.85569	600
27	37	411.3117	-10.10534	0	2269.0028	400.08641	600
28	37	421.64305	-6.0132965	0	1737.3406	306.34003	600
29	37	431.9744	-1.5044646	0	1155.8913	203.81482	600
30	37	442.30575	3.4405425	0	523.06139	92.229836	600
31	37	448.8867	6.77324	0	98.252191	56.725929	300

Slices of Slip Surface: 72

	Slip Surface	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
1	72	150.8031	13.69611	0	296.32714	171.08455	300
2	72	160.92735	7.9171565	0	886.1074	511.59435	300
3	72	171.0516	2.5691615	0	1428.9804	825.0222	300
4	72	182.0853	-2.774729	0	2009.0406	354.24806	600
5	72	194.02845	-8.060379	0	2595.9461	457.73534	600
6	72	201.8831	-11.31035	0	2956.3539	521.28496	600
7	72	209.7808	-12.0494	0	3067.8605	540.94659	600
8	72	221.81	-12.0494	0	3036.3539	535.39112	600
9	72	233.83925	-12.0494	0	3004.8474	529.83566	600
10	72	245.8685	-12.0494	0	2973.4239	524.29486	600
11	72	257.8977	-12.0494	0	2941.9173	518.7394	600
12	72	269.9269	-12.0494	0	2910.4939	513.19859	600
13	72	281.95615	-12.0494	0	2879.0704	507.65779	600
14	72	293.9854	-12.0494	0	2847.5638	502.10233	600
15	72	306.0919	-12.0494	0	2812.1745	495.86224	600
16	72	318.2757	-12.0494	0	2772.86	488.93004	600
17	72	330.4595	-12.0494	0	2733.4635	481.98337	600
18	72	342.64335	-12.0494	0	2693.9849	475.02222	600
19	72	354.8272	-12.0494	0	2654.3421	468.03213	600
20	72	367.011	-12.0494	0	2614.6993	461.04204	600
21	72	379.1948	-12.0494	0	2574.8924	454.02301	600
22	72	391.3786	-12.0494	0	2535.0034	446.9895	600
23	72	403.5624	-12.0494	0	2495.0323	439.94152	600
24	72	415.7462	-12.0494	0	2454.9792	432.87907	600
25	72	427.93	-12.0494	0	2414.7619	425.78767	600
26	72	440.11385	-12.0494	0	2374.3804	418.66733	600
27	72	452.2977	-12.0494	0	2333.999	411.54699	600
28	72	464.01205	-9.7682125	0	2051.053	361.65598	600
29	72	475.25695	-4.9761465	0	1431.715	252.44999	600
30	72	489.357	1.7797165	0	566.92392	99.963983	600
31	72	497.8923	6.055577	0	13.302137	7.6799922	300

Slices of Slip Surface: 2

	Slip Surface	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
1	2	111.65535	14.598485	0	326.2768	188.376	300
2	2	122.90545	8.3294315	0	965.3705	557.35692	300
3	2	134.15555	2.6771715	0	1537.8083	887.85406	300
4	2	145.0068	-2.235556	0	2067.0291	364.47301	600
5	2	155.45915	-6.476085	0	2535.7409	447.11954	600
6	2	165.9115	-10.265229	0	2951.65	520.45553	600
7	2	175.94805	-12.0494	0	3173.5479	559.58212	600
8	2	185.5688	-12.0494	0	3142.9891	554.19377	600
9	2	195.1896	-12.0494	0	3112.4302	548.80542	600
10	2	205	-12.0494	0	3084.4	543.86294	600
11	2	215	-12.0494	0	3058.7	539.33134	600
12	2	225	-12.0494	0	3033	534.79973	600
13	2	235	-12.0494	0	3007.3	530.26813	600
14	2	245	-12.0494	0	2981.6	525.73653	600
15	2	255	-12.0494	0	2955.8	521.18729	600
16	2	265	-12.0494	0	2929.9	516.62042	600
17	2	275	-12.0494	0	2903.9	512.03592	600
18	2	285	-12.0494	0	2877.9	507.45142	600
19	2	295	-12.0494	0	2851.7	502.83165	600
20	2	305.30975	-12.0494	0	2821.4267	497.49366	600
21	2	315.9292	-12.0494	0	2787.0558	491.43314	600
22	2	326.54865	-12.0494	0	2752.4024	485.32281	600
23	2	337.1681	-12.0494	0	2717.749	479.21248	600
24	2	347.78755	-12.0494	0	2682.8131	473.05234	600
25	2	358.5891	-10.168716	0	2452.7449	432.4851	600
26	2	369.57275	-6.1630065	0	1929.7374	340.26477	600
27	2	380.5564	-1.6571147	0	1346.2062	237.37248	600
28	2	391.54005	3.3742269	0	700.2828	123.47875	600
29	2	399.8429	7.490903	0	183.27184	105.81205	300



0 100 200

SHEET TITLE

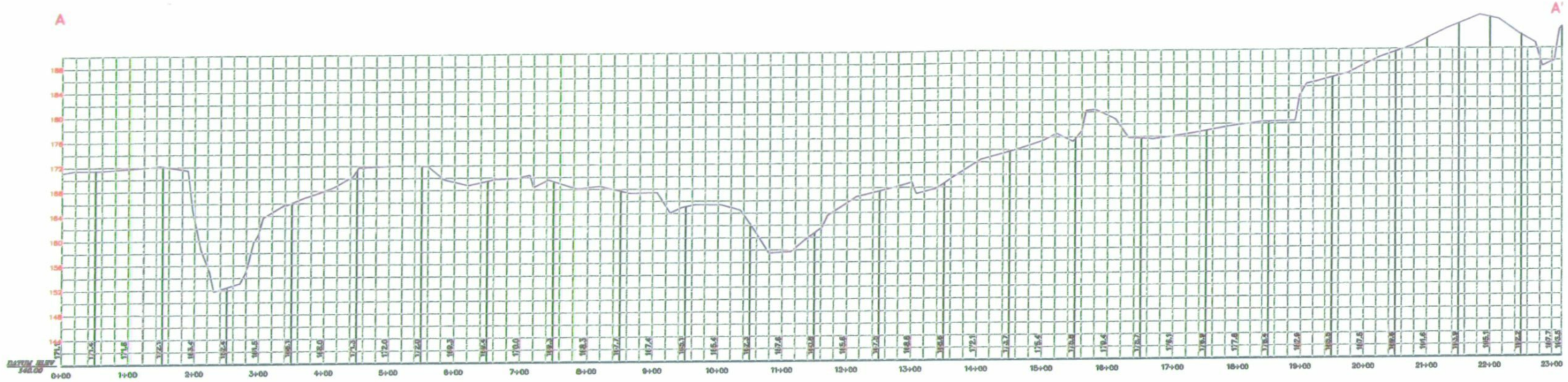
CROSS-SECTION LOCATION MAP

PROJECT TITLE

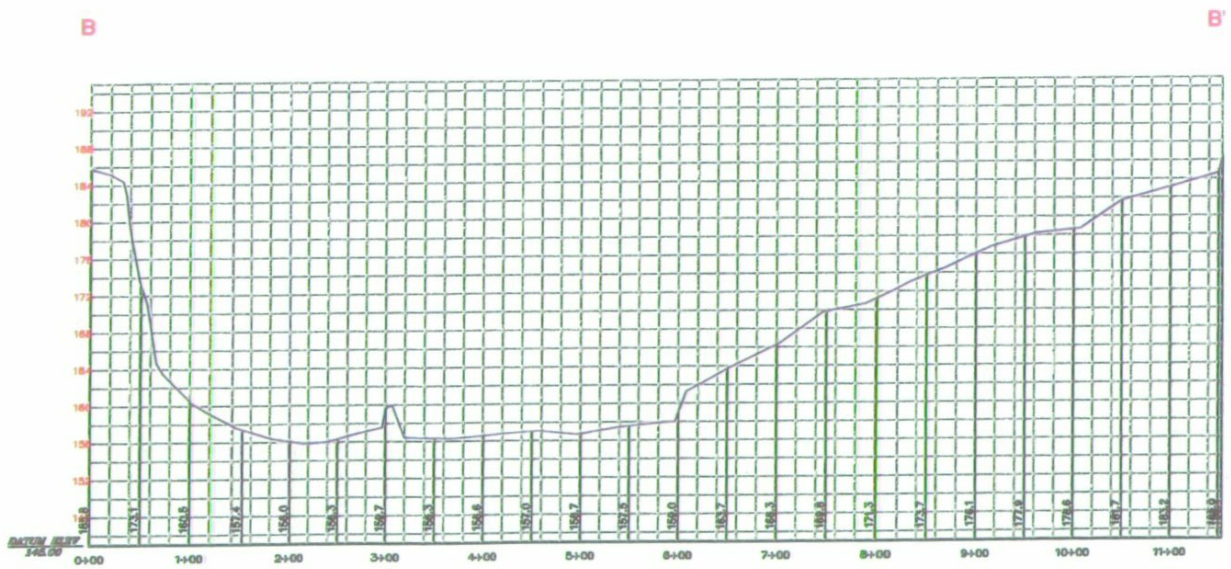
Mt. Zion C&D Landfill
687 Mt. Zion Road
Shreveport, Louisiana

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004
FAX: 225-218-9677
WWW.ARCADIS-US.COM

SEAL	SEAL
PROJECT MANAGER: G. CRAMER	DEPARTMENT MANAGER: G. CRAMER
DATE: 2008	CHECKED BY: DAL
TASK/PHASE NUMBER: 0001	DRAWN BY: S. MEN
PROJECT NUMBER: LA002706.0001	DRAWING NUMBER: 1



SECTION A-A'



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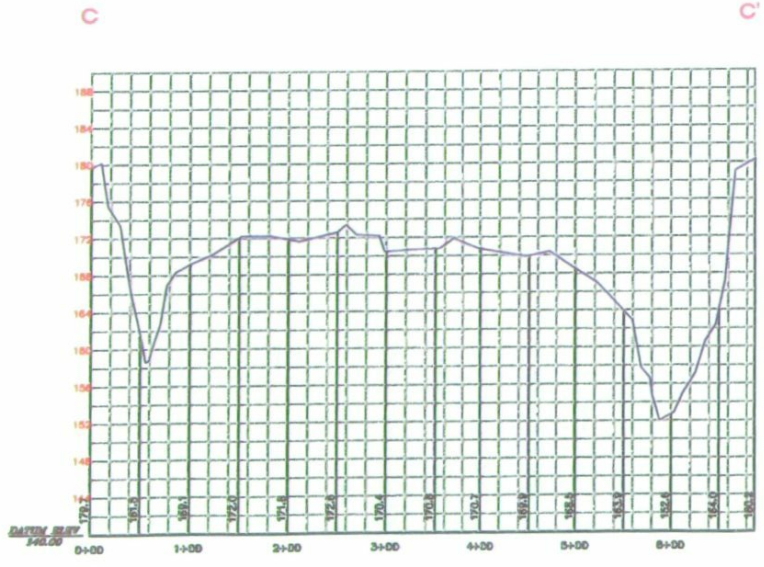


SECTION C-C'

0 100' 200'
HORIZONTAL SCALE

0 10' 20'
VERTICAL SCALE

SHEET TITLE

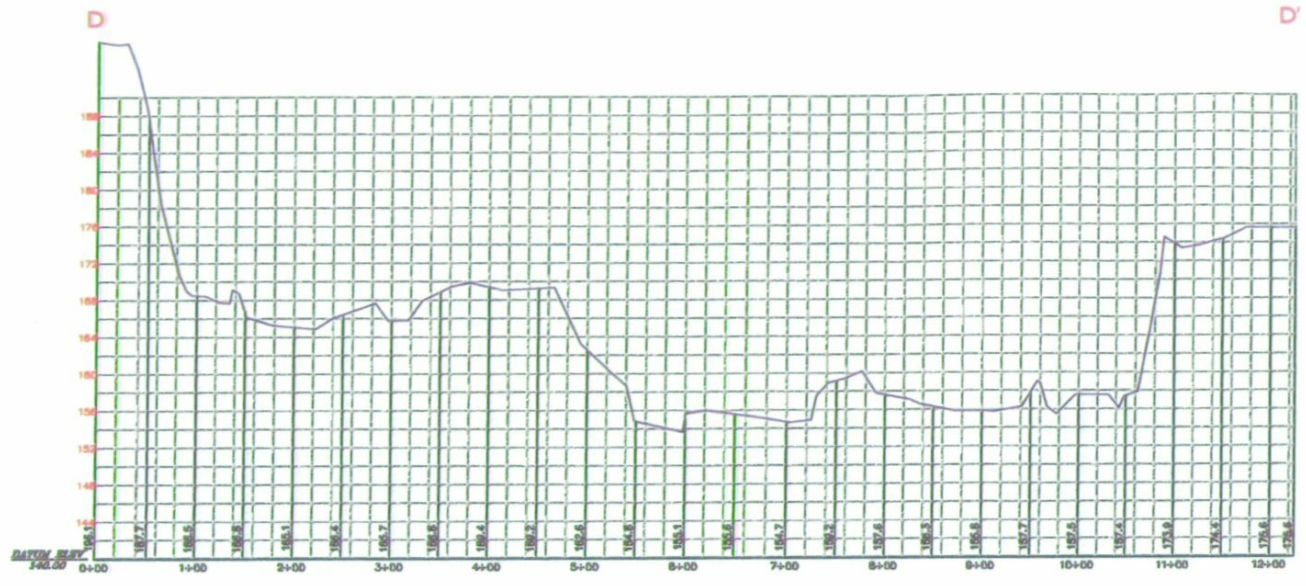
CROSS-SECTIONS A-A', B-B', AND C-C'

PROJECT TITLE

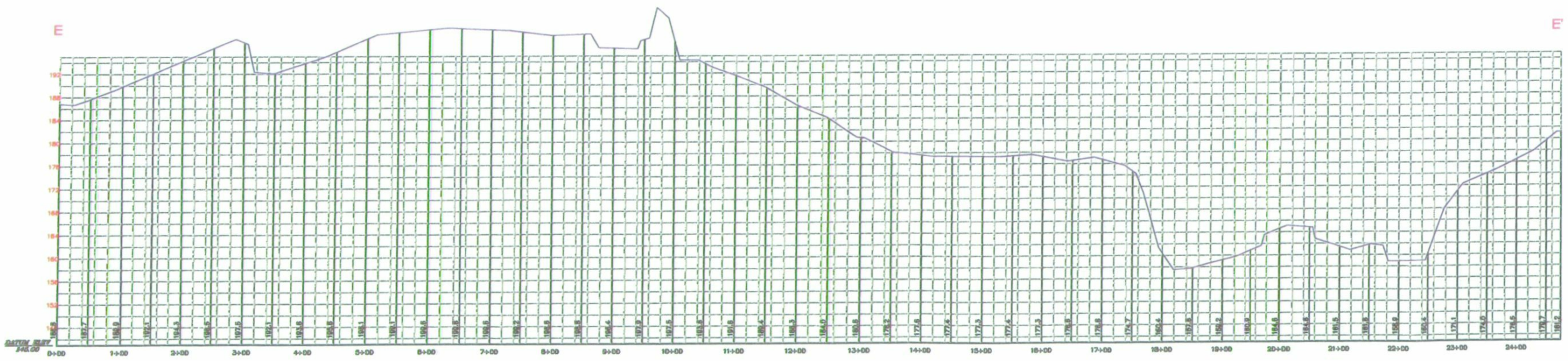
Mt. Zion C&D Landfill
687 Mt. Zion Road
Shreveport, Louisiana

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004
FAX: 225-218-9677
WWW.ARCADIS-US.COM

SEAL	SEAL
PROJECT MANAGER: G. CRAMER	DEPARTMENT MANAGER: G. CRAMER
DATE: 2008	CHECKED BY: DAL
TASK/PHASE NUMBER: 0001	DRAWN BY: S. MEN
PROJECT NUMBER: LA002706.0001	DRAWING NUMBER: 2



SECTION D-D'



SECTION E-E'

0 100' 200'
HORIZONTAL SCALE

0 10' 20'
VERTICAL SCALE

SHEET TITLE

CROSS-SECTIONS D-D' AND E-E'

PROJECT TITLE

Mt. Zion C&D Landfill
687 Mt. Zion Road
Shreveport, Louisiana

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004
FAX: 225-218-9677
WWW.ARCADIS-US.COM

SEAL	SEAL
PROJECT MANAGER: G. CRAMER	DEPARTMENT MANAGER: G. CRAMER
DATE: 2008	CHECKED BY: DAL
TASK/PHASE NUMBER: 0001	DRAWN BY: S. MEN
PROJECT NUMBER: LA002706.0001	DRAWING NUMBER: 3

Appendix G

Certificate of Compliance

Mt. Zion Road C & D
Type III Disposal Facility Application
Standard Permit Application

I certify under penalty of law that I have personally examined and I am familiar with the information submitted in this permit application and that the facility as described in this permit application meets the requirements of LAC 33.VII.Subpart 1. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment.

George H. Cramer, II, P.G.
Associate Vice President/Principal Scientist
ARCADIS U.S., Inc.

10/4/07
Date

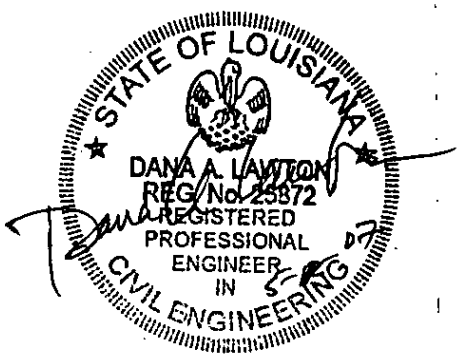
2706.1/M/2a/bbn

Engineering Certification

I certify under the penalty of the law that I have personally examined and I am familiar with the information submitted in this permit application and that the facility as described in this permit application meets the Solid Waste rules and regulations. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fines and imprisonment.

Dana A Lawton, P. E.

Dana A. Lawton
Louisiana Registration No. 25872



ARCADIS

Appendix H

Emergency Response Plan &
Training Program

Emergency Response Plan & Training Program

Mt. Zion C&D, LLC
Type III Landfill
Caddo Parish, Louisiana

Mt. Zion Road C&D Landfill
687 Mt. Zion Road
Shreveport, LA 71106
318.840.3242

January 2005

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1.0 Introduction

The following document outlines emergency response procedures associated with the daily operation of the Mt. Zion C&D ("Mt. Zion") Type III Landfill in Caddo Parish, Louisiana. This document is intended to comply with requirements outlined in the Louisiana Administrative Code 33:VII.721.C.5. This statute mandates that all Type III waste disposal facilities in the State of Louisiana must have an Emergency Response Plan or ERP.

This ERP is designed and written to provide a reference and directive for Mt. Zion landfill operators in the event of an emergency (a threat to health, safety, or the environment). The ERP provides a systematic approach to emergency response for the purpose of preventing confusion and minimizing negative consequences during an accident or crisis. Specifically, this document addresses emergency response procedures associated with the operation of the Type III Mt. Zion landfill.

All personnel and operators at the Landfill should be familiar with the ERP. The ERP should be reviewed and updated (if necessary) on an annual basis to consider current operations, emergency contact information, and evacuation routes.

Provisions and procedures included in this plan are intended to address many different type of emergencies and contingencies. Section 3 of the ERP provides general information that is site specific to the Mt. Zion Landfill; including the location, type and size of the facility, purpose of the facility, geographic features, topography, climate, and utilities that service the facility. Section 4 identifies all Landfill buildings, and structures. Section 5 provides a list of personnel, equipment, and procedures for responding to an emergency situation. Section 6 describes the security measures at the Mt. Zion Landfill. Section 7 summarizes the personnel training conducted at the facility. Plan review and amendment procedures are discussed in Section 8. Finally, conclusions and recommendations are presented in Section 9 of this ERP.

2.0 Emergency Response Plan Requirements

An ERP is required at all permitted Type III waste facilities regulated in the State of Louisiana. The requirement that specifically requires the ERP is LAC33:VII.721.C.5(a):

"A plan outlining facility operations and emergency procedures to be followed in case of accident, fire, explosion, or other emergencies shall be developed and filed with the Office of Environmental Services, Permits Division and with the local fire department and the closest hospital or clinic. The plans shall be updated annually, or when implementation demonstrates that a revision is needed."

3.0 General Information

3.1 Site Location

The Mt. Zion Landfill is located in Caddo Parish in the City of Shreveport, Louisiana. The site can be accessed by Mt. Zion Road, which, itself, is accessed from Hwy 3132 (I-220), by taking the Linwood Road exit, approximately ½ mile from I-49/Hwy 3132 intersection. **Figure 1** illustrates the general geographic location of the Mt. Zion Landfill.

3.2 Landfill Classification and Service Area

The Mt. Zion Landfill currently consists of a Type III waste disposal area that is operated in accordance with the Louisiana Administrative Cod 33:VII governing solid waste disposal in the State of Louisiana. A large portion of the site is dedicated to waste disposal activities.

Type III waste materials consist of construction and demolition debris and wood waste. Industrial and household municipal solid waste is excluded from the Mt. Zion Landfill's waste stream. There is always a possibility, however, that excluded waste may be brought to the Landfill unintentionally and that this waste could potentially represent a threat to health and safety.

The Service Area for the facility is an unrestricted area; but, practically speaking, encompasses two Louisiana Parishes: Caddo and Bossier.

3.3 Managing Authority and Personnel

The Landfill is co-owned and co-managed by Harrelson & Associates, LLC, a Louisiana limited liability company, and E-1 of Shreveport, LLC, also a Louisiana limited liability company. The managers of those two respective LLC's, are Michael Harrelson and David Strong.

In addition to the two owners, two (2) people are employed full-time at the Mt. Zion Landfill. Key personnel are listed in **Table 1.** The Landfill Manager is designated as the Facility On-Scene Coordinator (FOSC).

Table 1
Mt. Zion Landfill
Key Personnel

Co-Owner, Type A License	Michael Harrelson	318.286.6882
Co-Owner	David Strong	318.455.8090
Type B License, Landfill Manager	Alonzo Smith	318.840.3242
Scale Master	Chris Roton	318.840.3242

3.4 Location of Emergency Facilities and Evacuation Routes

In general, safety, first aid, and fire fighting equipment are maintained on the equipment and in the Scale Master's truck at the Mt. Zion Landfill. In addition, personal protective equipment and radio communications have been provided site personnel. The Shreveport Fire Department has provided a willingness to provide first response emergencies and services as indicated by their letter included in **Appendix C.**

In the event of a major emergency requiring an evacuation, the primary entrance to the Landfill will act as the primary evacuation route. The entrance/exit road for the Mt. Zion Landfill intersects Mt. Zion Road to the north. **Figure 2** depicts the location of the nearest medical facility in relation to the Mt. Zion Landfill.

4.0 Facility Structures

There are no permanent buildings or structures located at the Mt. Zion Landfill. There is no potable water, electricity, or telephone (other than cell phone) at the Landfill. Sanitary facilities are in the form of portable toilets.

5.0 Emergency Procedures & Equipment

An "Emergency" is defined as any situation, condition, or circumstance that could be a potential danger to human life or health, the environment, or any situation that would require the response of emergency personnel. The Mt. Zion Landfill has established general guidelines and procedures for responding to emergency situations (See **Appendix A**). Emergency situations include, but are not limited to:

- *Fire: This situation would most likely include a trash fire, brush fire, or equipment fire. Fires can originate due to natural occurrences such as lighting, equipment malfunction, or human error.*
- *Medical Emergency: A medical emergency would include any situation or accident to anyone at the Landfill that requires medical attention beyond the established scope of "First Aid".*
- *Security Breach: A security breach would include any situation that would require the immediate response of law enforcement personnel. Potential security breaches would include unauthorized access after operating hours, illegal dumping, vandalism, or attempted arson associated with facility equipment.*
- *Unauthorized Waste: An unauthorized waste emergency would include any situation where there is a need for stabilization or removal of any hazardous substance, radioactive material, hazardous waste, explosives, medical waste or any type of unpermitted waste that can pose a threat to the lives or health of Mt. Zion employees.*
- *Vehicle Accident: The Landfill is located in relatively close proximity to a major interstate. As such a vehicle accident at the facility or in the vicinity of the facility is possible.*

- *Natural Disaster or Weather Related Emergency: A natural disaster and/or weather related emergency such as flood, tornado, or earthquake may require immediate attention in regards to emergency response at the site.*

5.1 Emergency Procedures

In the event of an emergency, the following guidelines (depending upon the severity and nature of the situation) are to be followed:

I) The communication system is to be activated and all personnel at the Landfill are to be notified regarding the emergency. The site should be evacuated if necessary. Evacuation routes are shown in **Figure 2**.

II) The Facility On-Scene Coordinator (FOSC) or an Alternate FOSC shall be immediately contacted if they are not notified already. The personnel discovering the emergency condition will then immediately initiate the following:

a) Call 911. Fire, Ambulance, or Police, if deemed necessary by the FOSC and conduct any necessary actions as directed by the FOSC and/or his alternate.

b) If the FOSC or his/her alternate is not available, the personnel discovering the emergency will then exercise his/her best judgment and implement the FOSC response plan listed below.

The FOSC will implement the following:

1. Notify state and/local agencies and emergency response personnel if their help is needed.
2. If there is a chemical release, fire, or explosion immediately identify the character, exact source, amount, and real extent of any released materials. The reconnaissance should only be conducted if it can be done without compromising the FOSC's personal safety or the safety of others.
3. Concurrently, assess possible hazards (both direct and indirect effects) to human health and the environment that may result from the release, fire, or explosion.
4. If it is determined that the release, fire or explosion may threaten human health or the environment outside the facility, the following should be reported:
   Notify the local authorities for possible evacuation and provide aid, if necessary. The notification must include the following:
   i. Name and telephone number of the reporter;
   ii. Name and address of the facility;
   iii. Time, and type of incident;
   iv. Type of emergency and the name and quantity of any materials involved;
   v. The extent of injuries; and,

vi. The possible hazards to human health and the environment, outside the facility.

5. If evacuation of the Mt. Zion Landfill is necessary, all persons should be notified and accounted for.
6. The FOSC shall take all reasonable measures to ensure that fires, explosions and releases do not occur, reoccur, or spread to other operations at the facility.
7. Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or water or any other material that results from any chemical release, fire, or explosion.
8. The emergency coordinator must ensure that, in the effected area of the facility:
    a. No waste that is incompatible with the released material is treated, stored, or disposed of until clean-up procedures are completed.
    b. All emergency equipment listed in the Emergency Response Plan (ERP) is cleaned and fit for its intended use before operations are resumed.
    c. The extent of injuries and an assessment of hazards to human health and the environment is documented.
9. Documentation and reporting – All emergencies or occurrences and response measures implemented should be documented and maintained as part of the Mt. Zion permanent operating record **(Appendix B)**.

Permanent operating records pertaining to the Landfill operations are generally maintained offsite, at the home of Michael Harrelson, where billing is completed.

5.2 Emergency Equipment

The emergency response equipment that is available and a description of their location at the facility are shown in **Table 2.**

Table 2
Emergency Response Equipment Summary

Description	*Location/Remarks*
Eye & Ear Protection	Ear plugs & eye goggles-LF truck
Eye Wash Area	First Aid kit-LF Truck
Rubber Boots, Hard Hats	LF Truck
Shovels	LF Truck
Absorbent Material	Cover dirt piles
Fire Plug	Mt. Zion Road near entrance
Fire Extinguishers	Located on Equipment, LF truck
Water Sources	Wetland pond
Radio Communication	Each employee issued
Telephone Communication	Each employee

Table 3
Spill and Emergency Contact List

Contact	*Phone Number*
Police, Fire and Medical Response (emergency)	911
Shreveport Police Dept	911
Louisiana State Police (emergency)	911
Caddo Parish Sheriff's Office	911
Shreveport Fire Dept	911
Caddo Parish	318.221.6273
Caddo-Bossier Office of Homeland Security & Emergency (OHSEP)	318.425.5351
Willis-Knighton Pierremont Hospital	318.212.3200
LDEQ-Permits Division	225.219.3181

6.0 Security

The maximum days and hours of operation will be 6:30 AM to 7 PM Monday through Saturday. At all other times, the entrance to the Landfill will be locked, thus eliminating access when the Landfill is closed. Normal operational hours will be 7AM to 5PM Monday through Friday. The normal operational hours will be posted at the gate. During operating hours, the single entrance to the facility is continuously manned and monitored by a certified solid waste operator. During non-operating hours, the single entrance is locked.

7.0 Personnel Training Plan

The Landfill has a specific number and level of certified landfill operators employed at the facility as required by the Louisiana Administrative Code, Title 46, Part XXIII and the LDEQ. The Board of Certification and Training for Solid Waste Disposal System Operators and the Office of Environmental Services, Permits Division will be notified within 30 days of any changes in the employment status of certified operators.

Personnel training records for all Mt. Zion Landfill operators and personnel are kept on file as part of the facility permanent operating record. All new hires will be required to read and understand the purpose and location of this ERP. Training sessions will be conducted annually (once per calendar year) for all employees working at the Mt. Zion Landfill. These sessions consists of:

- an intense review of the EPR
- an emergency drill exercise
- a discussion of potential emergencies and each individual's expected role with regard to Section 5.1 Emergency Procedures
- a written exam given each employee over the material covered, above.

These sessions will be conducted by the designated Facility On-Scene Coordinator (FOSC). The training program will be developed and conducted in accordance with OSHA Publication 3088 "How to Prepare for Workplace Emergencies" (**Appendix A**).

8.0 Plan Review and Amendments

This ERP is to be reviewed and evaluated at least once every year from the date that this plan is finalized and goes into effect. This policy should remain in effect until the Landfill is officially closed in accordance with LDEQ requirements. This ERP should also be reviewed and amended whenever:

- The plan fails in an emergency situation; and/or,
- The Landfill changes its design, construction, operation, or maintenance in a way that materially affects the Landfill's potential to respond to an emergency.

The ERP is to be amended as soon as possible, but no later than one month after such a change occurs.

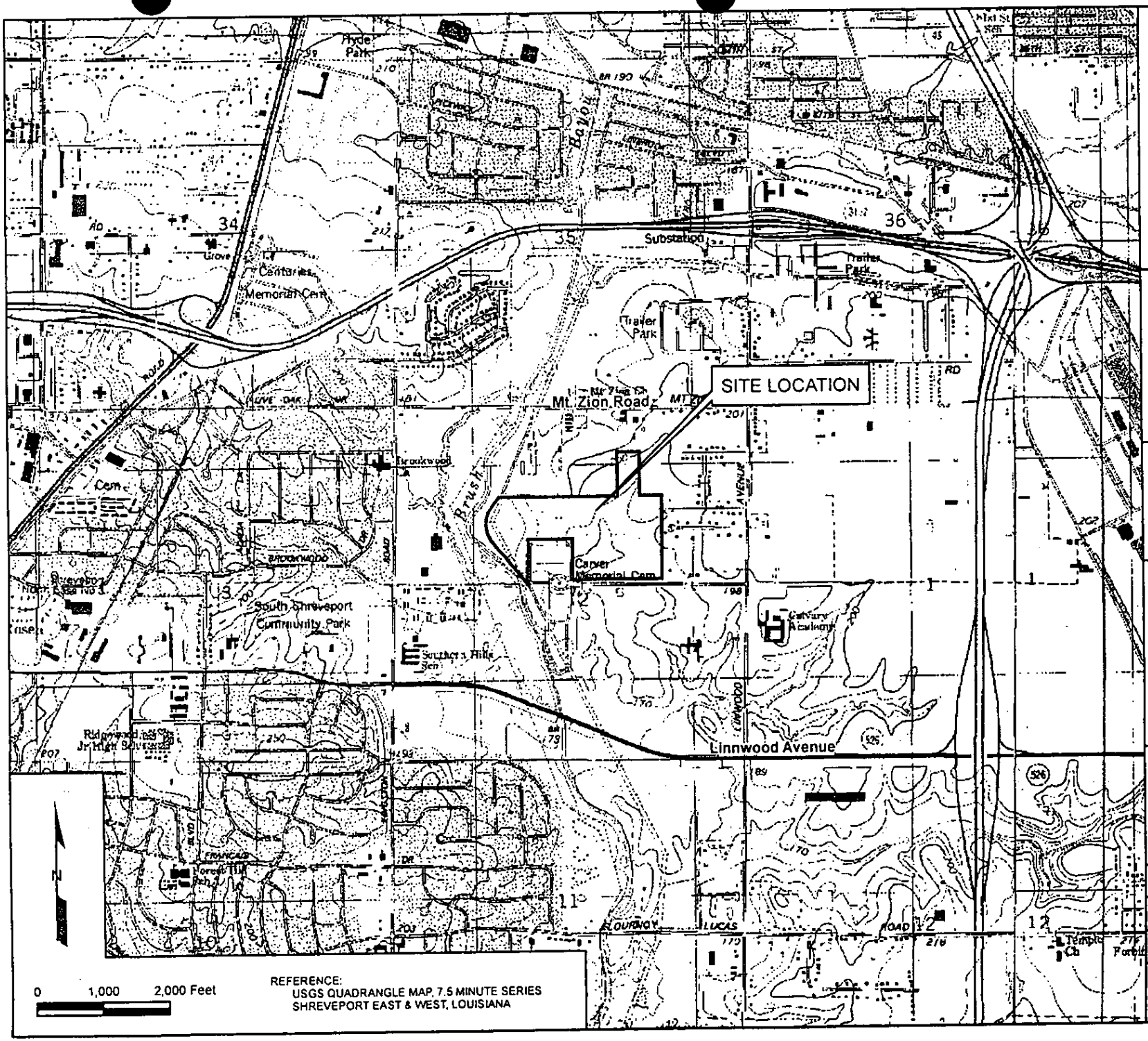
9.0 Conclusions and Recommendations

Potential emergencies include but are not limited to:

1) A fire or explosion of any type;
2) Unauthorized dumping or any breach in Landfill security;
3) Medical emergencies;
4) Stabilization of any unauthorized materials or hazardous waste (includes radioactive materials and infectious waste);
5) Weather related emergencies (tornado, severe thunderstorm, etc.);
6) Vehicles crash; and,
7) Natural disaster (e.g., earthquake, flood).

The following recommendations should be considered as necessary for responding to emergencies at the Landfill:

- A copy of this plan should remain at the Mt. Zion Landfill at all times. All Mt. Zion employees should be familiar with this ERP and should have access to a copy at all times. They should also be aware of the locations of all local hospitals within the area.
- All new employees at the Landfill must have the necessary training for landfill operations and Hazardous Waste recognition as required by the LDEQ. It is also important that all new employees read and understand this ERP.
- All operators should have proper ear protection, eye protection, steel toe boots, and a hard hat at all times.



REFERENCE:
USGS QUADRANGLE MAP, 7.5 MINUTE SERIES
SHREVEPORT EAST & WEST, LOUISIANA

SITE LOCATION MAP

Mt. Zion C&D Landfill
687 Mt. Zion Road
Shreveport, Louisiana

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004
FAX: 225-218-9677
WWW.ARCADIS-US.COM

PROJECT MANAGER: GHC	CHECKED BY: PM
DRAWING FILE:	GIS FILE:
DRAWING BY: JEC	DATE: 09-12-06
PROJECT NUMBER: LA002706.0001	DRAWING NUMBER: 1

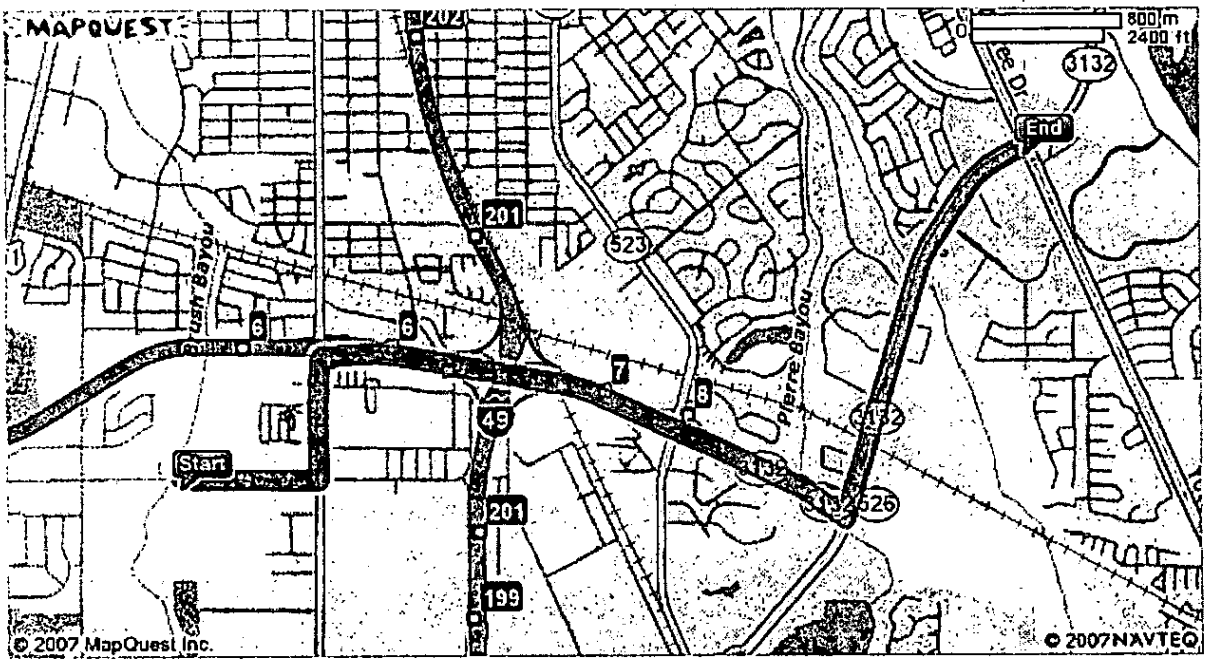
MAPQUEST.

Start: **687 Mount Zion Rd**
Shreveport, LA 71106-6405, US

End: **Lifecare Pierremont Hospital:**
318-212-3200
8001 Youree Dr, Shreveport, LA 71115, US

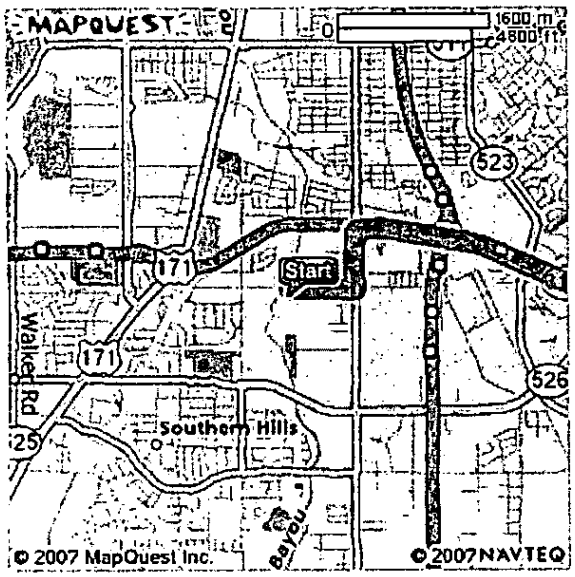
Notes:
Only text visible within note field will print.

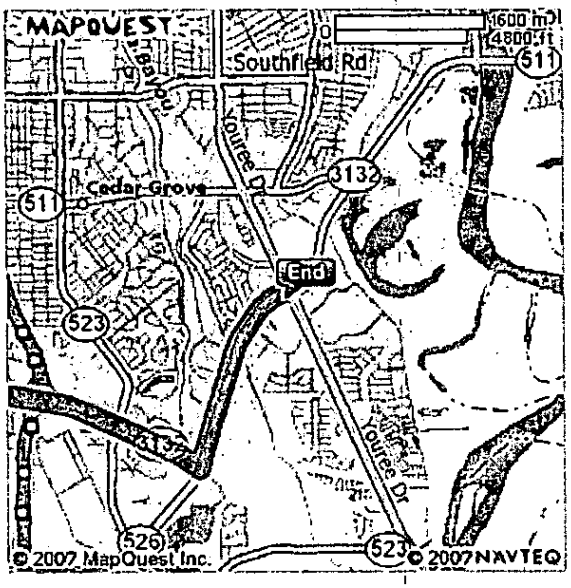
Directions	Distance
Total Est. Time: 8 minutes **Total Est. Distance:** 5.11 miles	
1: Start out going EAST on MT ZION RD toward LINWOOD AVE.	0.5 miles
2: Turn LEFT onto LINWOOD AVE.	0.4 miles
3: Merge onto LA-3132 E.	2.1 miles
4: Take the BERT KOUNS INDUSTRIAL LOOP EXPY / LA-526 exit.	0.2 miles
5: Turn LEFT onto E BERT KOUNS INDUSTRIAL LOOP EXPY / LA-3132 E / LA-526 E. Continue to follow E BERT KOUNS INDUSTRIAL LOOP EXPY / LA-3132 E.	1.7 miles
6: End at **Lifecare Pierremont Hospital:** 8001 Youree Dr, Shreveport, LA 71115, US	
Total Est. Time: 8 minutes **Total Est. Distance:** 5.11 miles	



Start:
687 Mount Zion Rd
Shreveport, LA 71106-6405, US

End:
Lifecare Pierremont Hospital:
318-212-3200
8001 Youree Dr, Shreveport, LA 71115, US





Directions to Shreveport, LA 71118-3119

YAHOO! LOCAL Maps

Summary and Notes

START A **624 Mount Zion Rd, Shreveport, LA 71106-6406**

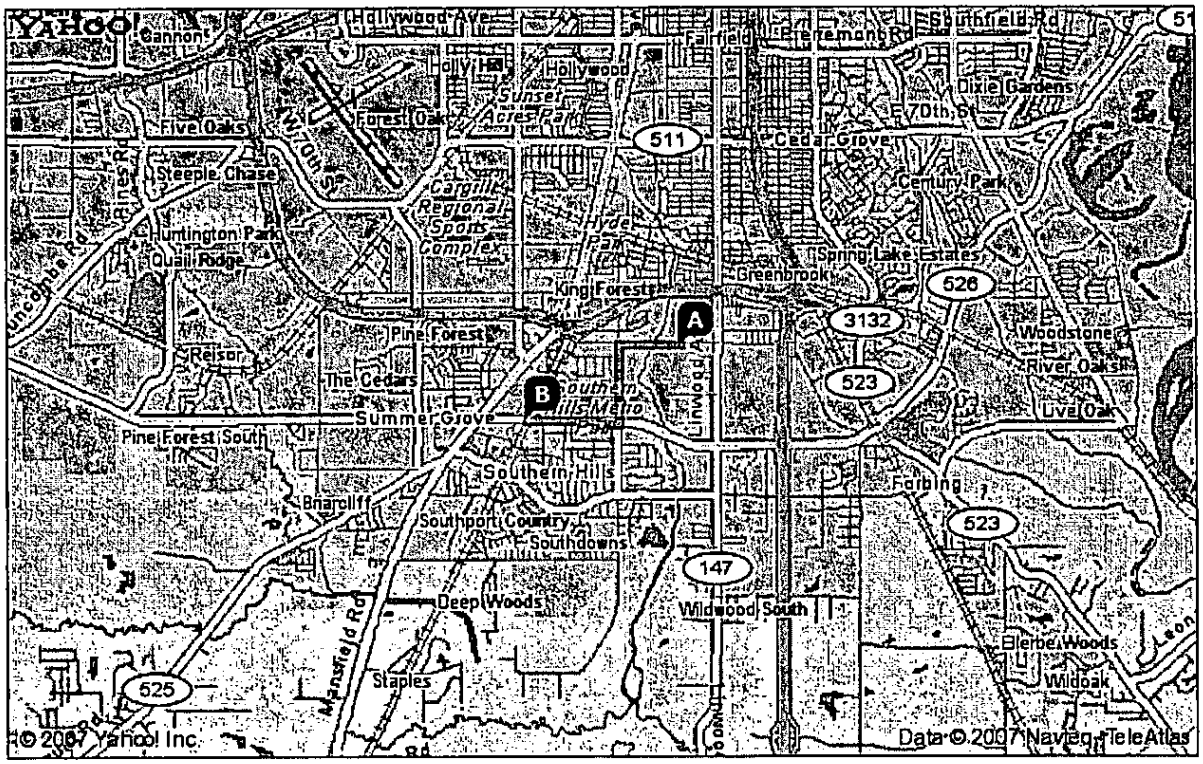
FINISH B **2510 Bert Kouns Industrial Loop, Shreveport, LA 71118-3119**

Total Distance: 2.3 miles, Total Time: 5 mins (approx.)

Add your notes here...

	Distance
A 624 MOUNT ZION RD, SHREVEPORT, LA 71106-6406	
1. Start at **624 MOUNT ZION RD, SHREVEPORT** on **MT ZION RD** going toward **GREY HAWK RD**	go **0.6** mi
2. Turn **L** on **KINGSTON RD**	go **0.8** mi
3. Turn **R** on **BERT KOUNS INDUSTRIAL LOOP EXPY[LA-526]**	go **0.9** mi
4. Arrive at **2510 BERT KOUNS INDUSTRIAL LOOP, SHREVEPORT,** on the **R**	
B 2510 BERT KOUNS INDUSTRIAL LOOP, SHREVEPORT, LA 71118-3119	

Distance: 2.3miles, Time: 5 mins



When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

Figure 2

APPENDIX A:

How to Prepare for Work Place Emergencies-OSHA 3088

How to Plan for Workplace Emergencies and Evacuations

U.S. Department of Labor
Occupational Safety and Health Administration

OSHA 3088
2001 (Revised)

This booklet provides a generic overview of a standards-related topic. This publication does not alter or determine compliance responsibilities, which are described in the OSHA standards and the Occupational Safety and Health Act. Because interpretations and enforcement policy may change over time, the best sources for additional guidance on OSHA compliance requirements are current administrative interpretations and decisions by the Occupational Safety and Health Review Commission and the courts. This publication is in the public domain and may be reproduced fully or partially without permission. Source credit is requested but not required.

OSHA will make this information available to sensory impaired individuals upon request. Call (202) 693-1999.

How to Plan for Workplace Emergencies and Evacuations

U.S. Department of Labor
Elaine L. Chao, Secretary

John L. Henshaw, Assistant Secretary
Occupational Safety and Health Administration

OSHA 3088
2001 (Revised)

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Introduction

Nobody expects an emergency or disaster – especially one that affects them, their employees, and their business personally. Yet the simple truth is that emergencies and disasters can strike anyone, anytime, and anywhere. You and your employees could be forced to evacuate your company when you least expect it.

This booklet is designed to help you, the employer, plan for that possibility. The best way to protect yourself, your workers, and your business is to expect the unexpected and develop a well-thought-out emergency action plan to guide you when immediate action is necessary.

What is a workplace emergency?

A workplace emergency is an unforeseen situation that threatens your employees, customers, or the public; disrupts or shuts down your operations; or causes physical or environmental damage. Emergencies may be natural or manmade and include the following:

- Floods,
- Hurricanes,
- Tornadoes,
- Fires,
- Toxic gas releases,
- Chemical spills,
- Radiological accidents,
- Explosions,
- Civil disturbances, and
- Workplace violence resulting in bodily harm and trauma.

How do you protect yourself, your employees, and your business?

The best way is to prepare to respond to an emergency before it happens. Few people can think clearly and logically in a crisis, so it is important to do so in advance, when you have time to be thorough.

Brainstorm the worst-case scenarios. Ask yourself what you would do if the worst happened. What if a fire broke out in your boiler room? Or a hurricane hit your building head-on? Or a train carrying hazardous waste derailed while passing your loading dock? Once you have identified potential emergencies, consider how they would affect you and your workers and how you would respond.

What is an emergency action plan?

An emergency action plan covers designated actions employers and employees must take to ensure employee safety from fire and other emergencies. Not all employers are required to establish an emergency action plan. See the flowchart on page 11 to determine if you are. Even if you are not specifically required to do so, compiling an emergency action plan is a good way to protect yourself, your employees, and your business during an emergency.

Putting together a comprehensive emergency action plan that deals with all types of issues specific to your worksite is not difficult.

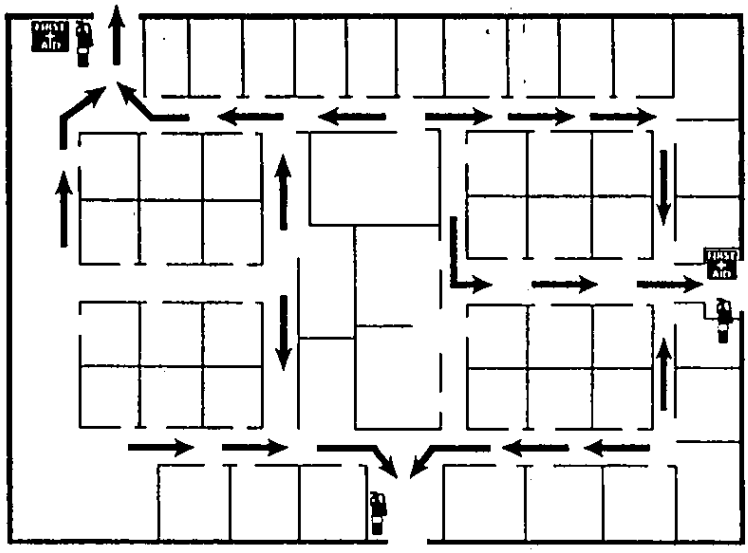
What should your emergency action plan include?

You may find it beneficial to include your management team and employees in the process. Explain your goal of protecting lives and property in the event of an emergency, and ask for their help in establishing and implementing your emergency action plan. Their commitment and support are critical to the plan's success.

When developing your emergency action plan, it's a good idea to look at a wide variety of potential emergencies that could occur in your workplace. It should be tailored to your worksite and include information about all potential sources of emergencies. Developing an emergency action plan means you should do a hazard assessment to determine what, if any, physical or chemical hazards in your workplaces could cause an emergency. If you have more than one worksite, each site should have an emergency action plan.

At a minimum, your emergency action plan must include the following:

- A preferred method for reporting fires and other emergencies;
- An evacuation policy and procedure;
- Emergency escape procedures and route assignments, such as floor plans, workplace maps, and safe or refuge areas;



- Names, titles, departments, and telephone numbers of individuals both within and outside your company to contact for additional information or explanation of duties and responsibilities under the emergency plan;
- Procedures for employees who remain to perform or shut down critical plant operations, operate fire extinguishers, or perform other essential services that cannot be shut down for every emergency alarm before evacuating; and
- Rescue and medical duties for any workers designated to perform them.

You also may want to consider designating an assembly location and procedures to account for all employees after an evacuation.

In addition, although they are not specifically required by OSHA, you may find it helpful to include in your plan the following:

- The site of an alternative communications center to be used in the event of a fire or explosion; and
- A secure on- or offsite location to store originals or duplicate copies of accounting records, legal documents, your employees' emergency contact lists, and other essential records.

How do you alert employees to an emergency?

Your plan must include a way to alert employees, including disabled workers, to evacuate or take other action, and how to report emergencies, as required. Among the steps you must take are the following:

- Make sure alarms are distinctive and recognized by all employees as a signal to evacuate the work area or perform actions identified in your plan;
- Make available an emergency communications system such as a public address system, portable radio unit, or other means to notify employees of the emergency and to contact local law enforcement, the fire department, and others; and
- Stipulate that alarms must be able to be heard, seen, or otherwise perceived by everyone in the workplace. You might want to consider providing an auxiliary power supply in the event that electricity is shut off. (*29 CFR* 1910.165(b)(2) offers more information on alarms.)

Although it is not specifically required by OSHA, you also may want to consider the following:

- Using tactile devices to alert employees who would not otherwise be able to recognize an audible or visual alarm; and
- Providing an updated list of key personnel such as the plant manager or physician, in order of priority, to notify in the event of an emergency during off-duty hours.

How do you develop an evacuation policy and procedures?

A disorganized evacuation can result in confusion, injury, and property damage. That is why when developing your emergency action plan it is important to determine the following:

- Conditions under which an evacuation would be necessary;
- A clear chain of command and designation of the person in your business authorized to order an evacuation or shutdown. You may want to designate an "evacuation warden" to assist others in an evacuation and to account for personnel;
- Specific evacuation procedures, including routes and exits. Post these procedures where they are easily accessible to all employees;
- Procedures for assisting people with disabilities or who do not speak English;
- Designation of what, if any, employees will continue or shut down critical operations during an evacuation. These people must be

capable of recognizing when to abandon the operation and evacuate themselves; and

- A system for accounting for personnel following an evacuation. Consider employees' transportation needs for community-wide evacuations.

Under what conditions should you call for an evacuation?

In the event of an emergency, local emergency officials may order you to evacuate your premises. In some cases, they may instruct you to shut off the water, gas, and electricity. If you have access to radio or television, listen to newscasts to keep informed and follow whatever official orders you receive.

In other cases, a designated person within your business should be responsible for making the decision to evacuate or shut down operations. Protecting the health and safety of everyone in the facility should be the first priority. In the event of a fire, an immediate evacuation to a predetermined area away from the facility is the best way to protect employees. On the other hand, evacuating employees may not be the best response to an emergency such as a toxic gas release at a facility across town from your business.

The type of building you work in may be a factor in your decision. Most buildings are vulnerable to the effects of disasters such as tornadoes, earthquakes, floods, or explosions. The extent of the damage depends on the type of emergency and the building's construction. Modern factories and office buildings, for example, are framed in steel and are structurally more sound than neighborhood business premises may be. In a disaster such as a major earthquake or explosion, however, nearly every type of structure will be affected. Some buildings will collapse and others will be left with weakened floors and walls.

What is the role of coordinators and evacuation wardens during an emergency?

When drafting your emergency action plan, you may wish to select a responsible individual to lead and coordinate your emergency plan and evacuation. It is critical that employees know who the coordinator is and understand that person has the authority to make decisions during emergencies.

The coordinator should be responsible for the following:

- Assessing the situation to determine whether an emergency exists requiring activation of your emergency procedures;
- Supervising all efforts in the area, including evacuating personnel;

- Coordinating outside emergency services, such as medical aid and local fire departments, and ensuring that they are available and notified when necessary; and
- Directing the shutdown of plant operations when required.

You also may find it beneficial to coordinate the action plan with other employers when several employers share the worksite, although OSHA standards do not specifically require this.

In addition to a coordinator, you may want to designate evacuation wardens to help move employees from danger to safe areas during an emergency. Generally, one warden for every 20 employees should be adequate, and the appropriate number of wardens should be available at all times during working hours.

Employees designated to assist in emergency evacuation procedures should be trained in the complete workplace layout and various alternative escape routes. All employees and those designated to assist in emergencies should be made aware of employees with special needs who may require extra assistance, how to use the buddy system, and hazardous areas to avoid during an emergency evacuation.

How do you establish evacuation routes and exits?

When preparing your emergency action plan, designate primary and secondary evacuation routes and exits. To the extent possible under the conditions, ensure that evacuation routes and emergency exits meet the following conditions:

- Clearly marked and well lit;
- Wide enough to accommodate the number of evacuating personnel;
- Unobstructed and clear of debris at all times; and
- Unlikely to expose evacuating personnel to additional hazards.

If you prepare drawings that show evacuation routes and exits, post them prominently for all employees to see.

How do you account for employees after an evacuation?

Accounting for all employees following an evacuation is critical. Confusion in the assembly areas can lead to delays in rescuing anyone trapped in the building, or unnecessary and dangerous search-and-rescue operations. To ensure the fastest, most accurate accountability of your employees, you may want to consider including these steps in your emergency action plan:

- Designate assembly areas where employees should gather after evacuating;
- Take a head count after the evacuation. Identify the names and last known locations of anyone not accounted for and pass them to the official in charge;
- Establish a method for accounting for non-employees such as suppliers and customers; and

- Establish procedures for further evacuation in case the incident expands. This may consist of sending employees home by normal means or providing them with transportation to an offsite location.

How should you plan for rescue operations?

It takes more than just willing hands to save lives. Untrained individuals may endanger themselves and those they are trying to rescue. For this reason, it is generally wise to leave rescue work to those who are trained, equipped, and certified to conduct rescues.

If you have operations that take place in permit-required confined spaces, you may want your emergency action plan to include rescue procedures that specifically address entry into each confined space. (See also OSHA Publication 3138, *Permit-Required Confined Spaces*, and the National Institute for Occupational Safety and Health (NIOSH) Publication 80-106, *Criteria for a Recommended Standard... Working in Confined Spaces.*)

What medical assistance should you provide during an emergency?

If your company does not have a formal medical program, you may want to investigate ways to provide medical and first-aid services. If medical facilities are available near your worksite, you can make arrangements for them to handle emergency cases. Provide your employees with a written emergency medical procedure to minimize confusion during an emergency.

If an infirmary, clinic, or hospital is not close to your workplace, ensure that onsite person(s) have adequate training in first aid. The American Red Cross, some insurance providers, local safety councils, fire departments, or other resources may be able to provide this training. Treatment of a serious injury should begin within 3 to 4 minutes of the accident.

Consult with a physician to order appropriate first-aid supplies for emergencies. Medical personnel must be accessible to provide advice and consultation in resolving health problems that occur in the workplace. Establish a relationship with a local ambulance service so transportation is readily available for emergencies.

What role should employees play in your emergency action plan?

The best emergency action plans include employees in the planning process, specify what employees should do during an emergency, and ensure that employees receive proper training for emergencies. When you include your employees in your planning, encourage them to offer suggestions about potential hazards, worst-case scenarios, and proper emergency responses. After you develop the plan, review it with your employees to make sure everyone knows what to do before, during and after an emergency.

Keep a copy of your emergency action plan in a convenient location where employees can get to it, or provide all employees a copy. If you have 10 or fewer employees, you may communicate your plan orally.

What employee information should your plan include?

In the event of an emergency, it could be important to have ready access to important personal information about your employees. This includes their home telephone numbers, the names and telephone numbers of their next of kin, and medical information.

What type of training do your employees need?

Educate your employees about the types of emergencies that may occur and train them in the proper course of action. The size of your workplace and workforce, processes used, materials handled, and the availability of onsite or outside resources will determine your training requirements. Be sure all your employees understand the function and elements of your emergency action plan, including types of potential emergencies, reporting procedures, alarm systems, evacuation plans, and shutdown procedures. Discuss any special hazards you may have onsite such as flammable materials, toxic chemicals, radioactive sources, or water-reactive substances. Clearly communicate to your employees who will be in charge during an emergency to minimize confusion.

General training for your employees should address the following:

- Individual roles and responsibilities;
- Threats, hazards, and protective actions;
- Notification, warning, and communications procedures;
- Means for locating family members in an emergency;
- Emergency response procedures;
- Evacuation, shelter, and accountability procedures;
- Location and use of common emergency equipment; and
- Emergency shutdown procedures.

You also may wish to train your employees in first-aid procedures, including protection against bloodborne pathogens; respiratory protection, including use of an escape-only respirator; and methods for preventing unauthorized access to the site.

Once you have reviewed your emergency action plan with your employees and everyone has had the proper training, it is a good idea to hold practice drills as often as necessary to keep employees prepared. Include outside resources such as fire and police departments when possible. After each drill, gather management and employees to evaluate the effectiveness of the drill. Identify the strengths and weaknesses of your plan and work to improve it.

How often do you need to train your employees?

Review your plan with all your employees and consider requiring annual training in the plan. Also offer training when you do the following:

- Develop your initial plan;
- Hire new employees;
- Introduce new equipment, materials, or processes into the workplace that affect evacuation routes;
- Change the layout or design of the facility; and
- Revise or update your emergency procedures.

What does your plan need to include about hazardous substances?

No matter what kind of business you run, you could potentially face an emergency involving hazardous materials such as flammable, explosive, toxic, noxious, corrosive, biological, oxidizable, or radioactive substances.

The source of the hazardous substances could be external, such as a local chemical plant that catches on fire or an oil truck that overturns on a nearby freeway. The source may be within your physical plant. Regardless of the source, these events could have a direct impact on your employees and your business and should be addressed by your emergency action plan.

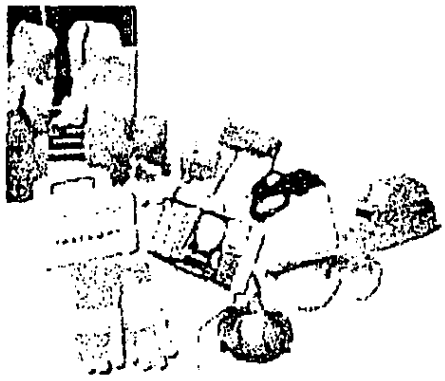
If you use or store hazardous substances at your worksite, you face an increased risk of an emergency involving hazardous materials and should address this possibility in your emergency action plan. OSHA's Hazard Communication Standard (*29 CFR* 1910.1200) requires employers who use hazardous chemicals to inventory them, keep the manufacturer-supplied Material Safety Data Sheets (MSDSs) for them in a place accessible to workers, label containers of these chemicals with their hazards, and train employees in ways to protect themselves against those hazards. A good way to start is to determine from your hazardous chemical inventory what hazardous chemicals you use and to gather the MSDSs for the chemicals. MSDSs describe the hazards that a chemical may present, list the precautions to take when handling, storing, or using the substance, and outline emergency and first-aid procedures.

For specific information on how to respond to emergencies involving hazardous materials and hazardous waste operations, refer to *29 CFR*, Part 1910.120(q) and OSHA Publication 3114, *Hazardous Waste and Emergency Response Operations*. Both are available online at www.osha.gov.

What special equipment should you provide for emergencies?

Your employees may need personal protective equipment to evacuate during an emergency. Personal protective equipment must be based on the potential hazards in the workplace. Assess your workplace to determine potential hazards and the appropriate controls and protective equipment for those hazards. Personal protective equipment may include items such as the following:

- Safety glasses, goggles, or face shields for eye protection;
- Hard hats and safety shoes for head and foot protection;
- Proper respirators;
- Chemical suits, gloves, hoods, and boots for body protection from chemicals;



- Special body protection for abnormal environmental conditions such as extreme temperatures; and
- Any other special equipment or warning devices necessary for hazards unique to your worksite.

How do you choose appropriate respirators and other equipment?

Consult with health and safety professionals before making any purchases. Respirators selected should be appropriate to the hazards in your workplace, meet OSHA standards-criteria, and be certified by the National Institute for Occupational Safety and Health.

Respiratory protection may be necessary if your employees must pass through toxic atmospheres of dust, mists; gases, or vapors, or through oxygen-deficient areas while evacuating. There are four basic categories of respirators for use in different conditions. All respirators must be NIOSH-certified under the current *29 CFR* 1910.134. See also OSHA's *Small Entity Compliance Guide for Respiratory Protection, 1999*, online at www.osha.gov.

Who should you coordinate with when drafting your emergency action plan?

Although there is no specific OSHA requirement to do so, you may find it useful to coordinate your efforts with any other companies or employee groups in your building to ensure the effectiveness of your plan. In addition, if you rely on assistance from local emergency responders such as the fire department, local HAZMAT teams, or other outside responders, you may find it useful to coordinate your emergency plans with these organizations. This ensures that you are aware of the capabilities of these outside responders and that they know what you expect of them.

What are OSHA's requirements for emergencies?

Some of the key OSHA requirements for emergencies can be found in the following sections of the agency's General Industry Occupational Safety and Health Standards (*29 CFR* 1910).

Subpart E – Means of Egress

1910.37	Means of egress
1910.38	Employee emergency plans and fire prevention plans
Appendix	Means of egress

Subpart H – Hazardous Materials

1910.119	Process safety management of highly hazardous chemicals
1910.120	Hazardous waste operations and emergency response

Subpart I – Personal Protective Equipment

1910.133	Eye and face protection
1910.134	Respiratory protection
1910.135	Occupational head protection
1910.136	Occupational foot protection
1910.138	Hand protection

Subpart J – General Environmental Controls

1910.146	Permit-required confined spaces
1910.147	Control of hazardous energy sources

Subpart K – Medical and First Aid

1910.151	Medical services and first aid

Subpart L – Fire Protection

1910.155-156	Fire protection and fire brigades
1910.157-163	Fire suppression equipment
1910.164	Fire detection systems
1910.165	Employee alarm systems

Appendices A-E of Subpart L

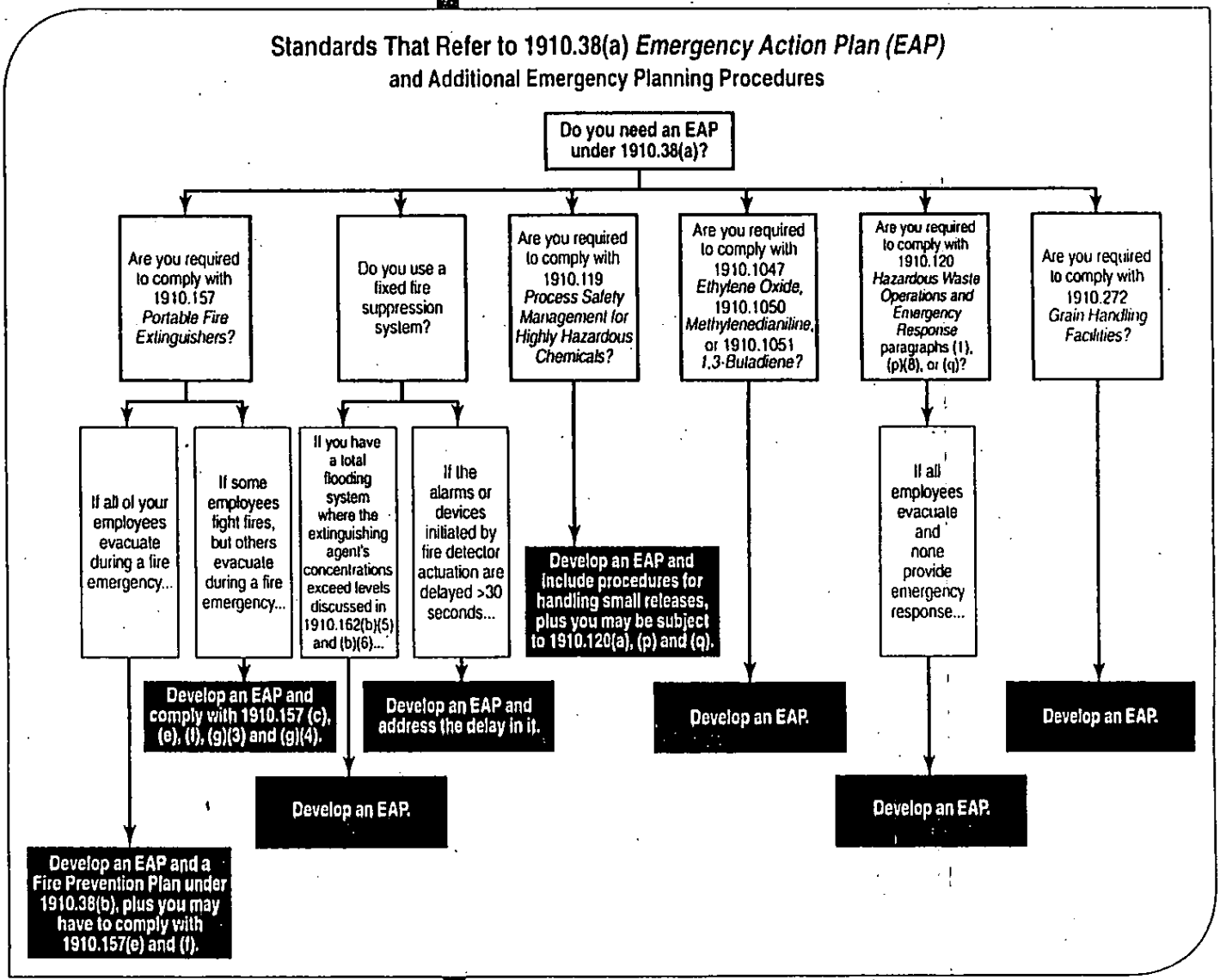
Subpart R – Special Industries, Electrical Power Generation, Transmission, and Distribution

Subpart Z – Toxic and Hazardous Substances

1910.1030	Bloodborne pathogens
1910.1200	Hazard communication

What other OSHA standards address emergency planning requirements?

In addition to *29 CFR* 1910.38(a), several other OSHA standards address emergency planning requirements. These include the *29 CFR* 1910.120(q), *Hazardous Waste Operations and Emergency Response*; *29 CFR* 1910.156, *Fire Brigades*; and *29 CFR* 1910.146(k), *Permit-Required Confined Spaces*. The OSHA Publication 3122, *Principal Emergency Response and Preparedness Requirements in OSHA Standards and Guidance for Safety and Health Problems*, provides a broad view of emergency planning requirements across OSHA standards.



What assistance does OSHA provide?

OSHA provides a wide range of references and services to help employers and employees improve workplace health and safety and comply with regulatory requirements. These include the following:

- Education and training opportunities,
- Publications,
- Electronic services,
- Free onsite consultation services, and
- Participation in the Voluntary Protection Programs.

To file a complaint, report an emergency, or seek OSHA advice, assistance, or products, call 1-800-321 OSHA or your nearest regional office, listed in Appendix 1. The teletypewriter (TTY) number is 1-877-889-5627.

Information on these and other OSHA programs and services is posted on the agency website at www.osha.gov.

What education and training does OSHA offer?

OSHA area offices offer a variety of information services including publications, audiovisual aids, technical advice, and speakers for special engagements.

In addition, OSHA's Training Institute in Des Plaines, IL, provides basic and advanced courses in safety and health for federal and state compliance officers, state consultants, federal agency employees, and private-sector employers, employees, and their representatives.

Due to the high demand for OSHA Training Institute courses, OSHA Training Institute Education Centers also offer them at sites throughout the United States. These centers are nonprofit colleges, universities, and other organizations selected through a competitive process.

OSHA also provides grants to nonprofit organizations to conduct specialized workplace training and education not available from other sources. Grants are awarded annually. Recipients contribute 20 percent of the total grant cost.

For more information on grants, training, and education, contact the OSHA Training Institute, Office of Training and Education by mail at 1555 Times Drive, Des Plaines IL 60018; by phone at (847) 297-4810, or by fax at (847) 297-4874.

What other publications does OSHA offer?

OSHA offers more than 100 documents, including brochures, fact sheets, posters, pocket cards, flyers, technical documents, and a quarterly magazine. These documents are available online at www.osha.gov or by calling (202) 693-1888. Among the titles are the following:

- *Access to Medical and Exposure Records* – OSHA 3110
- *All About OSHA* – OSHA 2056
- *Chemical Hazard Communication* – OSHA 3084
- *Consultation Services for the Employer* – OSHA 3047
- *Controlling Electrical Hazards* – OSHA 3075
- *Employer Rights and Responsibilities Following an OSHA Inspection* – OSHA 3000
- *Employee Workplace Rights* – OSHA 3021
- *Hazardous Waste and Emergency Response* – OSHA 3114
- *Job Hazard Analysis* – OSHA 3071
- *OSHA Handbook for Small Business* – OSHA 2209
- *Personal Protective Equipment* – OSHA 3077
- *Respirator Protection* – OSHA 3079

What electronic services does OSHA provide?

OSHA standards, interpretations, directives, and additional information are posted on the agency's website at www.osha.gov. Visits to the site continue to increase, with nearly 1.4 million visitors using the site each month for a total of 23 million hits.

Among the popular Internet offerings are electronic tools to help small businesses understand and comply with OSHA regulations and promote safety and health in their workplaces. These e-Tools include the Expert Advisors, interactive software programs that help businesses identify workplace hazards. By answering a few simple questions on their computer screens, employers get reliable answers on how OSHA regulations apply to their unique work sites.

Another popular Internet product is eCATS; OSHA's electronic Compliance Assistance Tools, which help businesses identify and correct workplace hazards. A totally new generation of e-Tools coming soon will combine both decision tree logic software and graphics, giving users enhanced capabilities and the best of both worlds.

In addition, a wide variety of OSHA materials including standards, interpretations, directives, and more can be purchased on CD-ROM from the Government Printing Office. To order, write to Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Specify *OSHA Regulations, Documents and Technical Information on CD-ROM, (ORDT)*, S/N 729-1300000-5. The price is $45 per year ($57.50 overseas); single copy $17 ($21.25 overseas).

What free onsite consultation services does OSHA provide?

The OSHA Consultation Service offers free onsite safety and health consultation services to help employers establish and maintain safe and healthful workplaces. The service is funded largely by OSHA and is delivered by professional safety and health consultants within state governments. Developed primarily for smaller employers with more hazardous operations, the service includes an appraisal of all mechanical systems, physical work practices, environmental workplace hazards, and all aspects of the employer's job safety and health program.

The onsite consultation program is separate from OSHA's inspection efforts. No penalties are proposed or citations issued for safety or health problems identified by an OSHA consultant. The service is confidential. The employer's and firm's name, and any information about the workplace, including any unsafe or unhealthful working conditions the consultant identifies, are not reported routinely to the OSHA inspection staff. The employer, however, is obligated to correct any serious job safety and health hazards identified in a timely manner, and commits to do so when requesting the service.

For more information, see Appendix 3 for a list of contact telephone numbers.

What are the Voluntary Protection Programs?

The Voluntary Protection Programs, or VPPs, recognize and promote effective safety and health program management. Companies in the VPP have strong safety and health programs, implemented and managed cooperatively by their management and labor forces in cooperation with OSHA. Sites approved for VPP's three programs – Star, Merit, and Demonstration – meet and maintain rigorous standards. Benefits to participants include the following:

- Lost-workday case rates generally 60 to 80 percent below industry averages;
- Reduced workers' compensation and other injury- and illness-related costs;
- Improved employee motivation to work safely, leading to better quality and productivity;
- Positive community recognition and interaction;
- Further improvement and revitalization of already good safety and health programs; and
- Partnership with OSHA.

For more information, contact the VPP manager in your OSHA regional office, visit OSHA's website, or see Appendix 1 for a list of telephone numbers.

What partnership opportunities does OSHA provide?

OSHA has initiated partnerships with employers, employees, and employee representatives in a wide range of industries to encourage, assist, and recognize efforts to eliminate workplace hazards. Participants work together to identify a common goal, develop plans to achieve it, and implement those plans in a cooperative way. Partnerships can transform relationships between OSHA and an employer or entire industry. Former adversaries recognize that working together to solve workplace safety and health problems is to everyone's advantage.

For more information, contact your OSHA regional office. See Appendix 1 for a list of telephone numbers.

What is the value of a good safety and health program?

A good, effectively managed worker safety and health program can be a big factor in reducing work-related injuries and illnesses and their related costs. OSHA offers voluntary guidelines to help employers and employees in workplaces it covers develop effective safety and health programs. *Safety and Health Program Management Guidelines (Federal Register* 54(18): 3908-3916, January 26, 1989) identifies four general elements critical to a successful safety and health management program. These are:

- Management leadership and employee involvement;
- An analysis of worksite hazards;
- Use of hazard prevention and control initiatives; and
- Safety and health training.

These guidelines are posted on the OSHA website at www.osha-slc.gov/FedReg_osha_data/FED19890126.html. See also OSHA's Safety and Health Management Systems eCAT at www.osha-slc.gov/SLTC/safetyhealthecat/index.html.

What is the role of state programs?

The *Occupational Safety and Health Act of 1970* encourages states to develop and operate their own job safety and health plans. States that do so must adopt standards and enforce requirements that are at least as effective as federal requirements. Twenty-four states and two territories have adopted their own plans, three of which cover only public employees. For more information, visit OSHA's website and see Appendix 2 for a listing of states and territories with approved plans.

What other groups or associations can help me?

Various organizations can provide you with safety and health information that may help you in formulating your emergency action plan. A few are listed here.

Safety Data Sheets, Guides and Manuals

- *AIHA Hygienic Guide Series.* American Industrial Hygiene Association, 2700 Prosperity Avenue, Fairfax, VA 22031.
- *ANSI Standards, Z37 Series, Acceptable Concentrations of Toxic Dusts and Gases.* American National Standards Institute, 11West 42nd Street, New York, NY 10036.

- *ASTM Standards and Related Material.* American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

Safety Standards and Specifications Groups

- American National Standards Institute, 11 West 42nd Street, New York, NY 10036. Coordinates and administers the federal voluntary standardization system in the United States.
- American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103. The world's largest source of voluntary consensus standards for materials, products, systems, and services.

Fire Protection Organizations

- Factory Insurance Association, 85 Woodland Street, Hartford, CT 06105. Composed of capital stock insurance companies that provide engineering, inspection, and loss-adjustment services.
- Factory Mutual System, 1151 Boston-Providence Turnpike, Norwood, MA 02062. An industrial fire protection, engineering, and inspection bureau established by mutual fire insurance companies.
- National Fire Protection Association, 470 Batterymarch Park, Quincy, MA 02269. A clearinghouse for information on fire protection and prevention as well as NFPA standards.
- Underwriter Laboratories, Inc., 207 East Ohio Street, Chicago, IL 60611. A nonprofit organization that publishes annual lists of manufacturers that provide products meeting appropriate standards.

Appendices

Appendix 1

OSHA Regional and Area Office Directory

OSHA Regional Offices

REGION I
(CT,* ME, MA, NH, RI, VT*)
JFK Federal Building, Room E340
Boston, MA 02203
(617) 565-9860

REGION II
(NJ,* PR,* VI*)
201 Varick Street, Room 670
New York, NY 10014
(212) 337-2378

REGION III
(DE, DC, MD,* PA,* VA,* WV)
The Curtis Center
170 S. Independence Mall West
Suite 740 West
Philadelphia, PA 19106-3309
(215) 861-4900

REGION IV
(AL, FL, GA, KY,* MS, NC,* SC,* TN*)
Atlanta Federal Center
61 Forsyth Street, SW, Room 6T50
Atlanta, GA 30303
(404) 562-2300

REGION V
(IL, IN,* MI,* MN,* OH, WI)
230 South Dearborn Street, Room 3244
Chicago, IL 60604
(312) 353-2220

REGION VI
(AR, LA, NM,* OK, TX)
525 Griffin Street, Room 602
Dallas, TX 75202
(214) 767-4731 or 4736 x224

REGION VII
(IA,* KS, MO, NE)
City Center Square
1100 Main Street, Suite 800
Kansas City, MO 64105
(816) 426-5861

REGION VIII
(CO, MT, ND, SD, UT,* WY*)
1999 Broadway, Suite 1690
Denver, CO 80202-5716
(303) 844-1600

REGION IX
(American Samoa, AZ,* CA,* HI, NV*)
71 Stevenson Street, Room 420
San Francisco, CA 94105
(415) 975-4310

REGION X
(AK,* ID, OR,* WA*)
1111 Third Avenue, Suite 715
Seattle, WA 98101-3212
(206) 553-5930

* These states and territories operate their own OSHA-approved job safety and health programs (Connecticut, New Jersey, and New York plans cover public employees only). States with approved programs must have a standard that is identical to, or at least as effective as, the federal standard.

OSHA Area Offices

Birmingham, AL	(205) 731-1534
Mobile, AL	(334) 441-6131
Anchorage, AK	(907) 271-5152
Phoenix, AZ	(602) 640-2348
Little Rock, AR	(501) 324-6291(5818)
San Diego, CA	(619) 557-5909
Sacramento, CA	(916) 566-7471
Denver, CO	(303) 844-5285
Englewood, CO	(303) 843-4500
Bridgeport, CT	(203) 579-5581
Hartford, CT	(860) 240-3152
Wilmington, DE	(302) 573-6518
Fort Lauderdale, FL	(954) 424-0242
Jacksonville, FL	(904) 232-2895
Tampa, FL	(813) 626-1177
Savannah, GA	(912) 652-4393
Smyrna, GA	(770) 984-8700
Tucker, GA	(770) 493-6644/6742
Boise, ID	(208) 321-2960
Calumet City, IL	(708) 891-3800
Des Plaines, IL	(847) 803-4800
Fairview Heights, IL	(618) 632-8612
North Aurora, IL	(630) 896-8700
Peoria, IL	(309) 671-7033
Indianapolis, IN	(317) 226-7290
Des Moines, IA	(515) 284-4794
Wichita, KS	(316) 269-6644
Frankfort, KY	(502) 227-7024
Baton Rouge, LA	(225) 389-0474/0431
Bangor, ME	(207) 941-8177
Portland, ME	(207) 780-3178
August, ME	(207) 622-8417
Linthicum, MD	(410) 865-2055/2056

Braintree, MA	(617) 565-6924
Methuen, MA	(617) 565-8110
Springfield, MA	(413) 785-0123
Lansing, MI	(517) 327-0904
Minneapolis, MN	(612) 664-5460
Jackson, MS	(601) 965-4606
Kansas City, MO	(816) 483-9531
St. Louis, MO	(314) 425-4289
Billings, MT	(406) 247-7494
Raleigh, NC	(919) 856-4770
Omaha, NE	(402) 221-3182
Carson City, NV	(775) 885-6963
Concord, NH	(603) 225-1629
Avenel, NJ	(732) 750-3270
Hasbrouck Heights, NJ	(201) 288-1700
Marlton, NJ	(609) 757-5181
Parsippany, NJ	(973) 263-1003
Albuquerque, NM	(505) 248-5302
Albany, NY	(518) 464-4338
Bayside, NY	(718) 279-9060
Bowmansville, NY	(716) 684-3891
North Syracuse, NY	(315) 451-0808
Tarrytown, NY	(914) 524-7510
Westbury, NY	(516) 334-3344
Bismark, ND	(701) 250-4521
Cincinnati, OH	(513) 841-4132
Cleveland, OH	(216) 522-3818
Columbus, OH	(614) 469-5582
Toledo, OH	(419) 259-7542
Oklahoma City, OK	(405) 231-5351/5389
Portland, OR	(503) 326-2251
Allentown, PA	(610) 776-0592
Erie, PA	(814) 833-5758
Harrisburg, PA	(717) 782-3902
Philadelphia, PA	(215) 597-4955
Pittsburgh, PA	(412) 395-4903
Wilkes-Barre, PA	(570) 826-6538
Guaynabo, PR	(787) 277-1560
Providence, RI	(401) 528-4669
Columbia, SC	(803) 765-5904
Nashville, TN	(615) 781-5423
Austin, TX	(512) 916-5783/5788
Corpus Christi, TX	(512) 888-3420
Dallas, TX	(214) 320-2400/2558
El Paso, TX	(915) 534-6251
Fort Worth, TX	(817) 428-2470 (485-7647)
Houston, TX	(281) 591-2438/2787
Houston, TX	(281) 286-0583/0584
Lubbock, TX	(806) 472-7681/7685
Salt Lake City, UT	(801) 530-6901

Norfolk, VA	(757) 441-3820
Bellevue, WA	(206) 553-7520
Charleston, WV	(304) 347-5937
Appleton, WI	(920) 734-4521
Eau Claire, WI	(715) 832-9019
Madison, WI	(608) 264-5388
Milwaukee, WI	(414) 297-3315

Appendix 2
OSHA-Approved Safety and Health Plans

Juneau, AK	(907) 465-2700
Phoenix, AZ	(602) 542-5795
San Francisco, CA	(415) 703-5050
Wethersfield, CT	(860) 566-5123
Honolulu, HI	(808) 586-8844
Indianapolis, ID	(317) 232-2378
Des Moines, IA	(515) 281-3447
Indianapolis, IN	(317) 232-3325
Frankfort, KY	(502) 564-3070
Baltimore, MD	(410) 767-2215
Lansing, MI	(517) 373-7230
St. Paul, MN	(651) 296-2342
Raleigh, NC	(919) 807-2900
Trenton, NJ	(609) 292-2975
Santa Fe, NM	(505) 827-2850
Carson City, NV	(775) 687-3032
Albany, NY	(518) 457-2741
Salem, OR	(503) 378-3272
Hato Rey, PR	(787) 754-2119
Columbia, SC	(803) 896-4300
Nashville, TN	(615) 741-2582
Salt Lake City, UT	(801) 530-6901
Richmond, VA	(804) 786-2377
Christiansted, St. Croix, VI	(340) 773-1990
Montpelier VT	(802) 828-2288
Olympia, WA	(360) 902-4200
	(360) 902-5430
Cheyenne, WY	(307) 777-7786

Appendix 3
OSHA Consultation Offices

Anchorage, AK	(907) 269-4957
Tuscaloosa, AL	(205) 348-3033
Little Rock, AR	(501) 682-4522
Phoenix, AZ	(602) 542-1695
Sacramento, CA	(916) 574-2555
Fort Collins, CO	(970) 491-6151
Wethersfield, CT	(860) 566-4550
Washington, DC	(202) 541-3727
Wilmington, DE	(302) 761-8219

Tampa, FL	(813) 974-9962
Atlanta, GA	(404) 894-2643
Tiyam, GU	9-1-(671) 475-1101
Honolulu, HI	(808) 586-9100
Des Moines, IA	(515) 281-7629
Boise, ID	(208) 426-3283
Chicago, IL	(312) 814-2337
Indianapolis, IN	(317) 232-2688
Topeka, KS	(785) 296-7476
Frankfort, KY	(502) 564-6895
Baton Rouge, LA	(225) 342-9601
West Newton, MA	(617) 727-3982
Laurel, MD	(410) 880-4970
Augusta, ME	(207) 624-6460
Lansing, MI	(517) 322-1809
Saint Paul, MN	(651) 297-2393
Jefferson City, MO	(573) 751-3403
Jackson, MS	(601) 987-3981
Helena, MT	(406) 444-6418
Raleigh, NC	(919) 807-2905
Bismarck, ND	(701) 328-5188
Lincoln, NE	(402) 471-4717
Concord, NH	(603) 271-2024
Trenton, NJ	(609) 292-3923
Santa Fe, NM	(505) 827-4230
Albany, NY	(518) 457-2238
Henderson, NV	(702) 486-9140
Columbus, OH	(614) 644-2631
Oklahoma City, OK	(405) 528-1500
Salem, OR	(503) 378-3272
Indiana, PA	(724) 357-2396
Hato Rey, PR	(787) 754-2171
Providence, RI	(401) 222-2438
Columbia, SC	(803) 734-9614
Brookings, SD	(605) 688-4101
Nashville, TN	(615) 741-7036
Austin, TX	(512) 804-4640
Salt Lake City, UT	(801) 530-6901
Montepilier, VT	(802) 828-2765
Richmond, VA	(804) 786-6359
Christiansted St. Croix, VI	(809) 772-1315
Olympia, WA	(360) 902-5638
Madison, WI	(608) 266-9383
Waukesha, WI	(262) 523-3044
Charleston, WV	(304) 558-7890
Cheyenne, WY	(307) 777-7786

Appendix B:

Emergency Incident Form

EMERGENCY INCIDENT FORM

Mt. Zion C&D, LLC
Mt. Zion Landfill
687 Mt. Zion Road
Shreveport, LA 71106
318.840.3242

Report Date: _____
Time: _____

Reporting Party:
Name: _____
Position: _____

Emergency Information and Description:
Date: _____ Time: _____
Emergency Location and Source: _____

If Hazardous Material or Spill Specify:

Amount:
Cause of Spill: _____

Status of Containment:
Containment Condition: _____
Spill Offsite: _____
Has Spill Reached Water Course: _____
Name of Water Body: _____

Report to Fort Smith Fire Department (911):
Report Date: _____ Time: _____
Person Spoken With: _____
Comments:

Report to LDEQ Emergency Response:
Report Date: _____ Time: _____
Person Spoken With: _____
Comments: _____

Report to National Response Center (1-800-424-8802):
Report Date: _____ Time: _____
Person Spoken With: _____
Comments: _____

General
Comments: _____

Appendix C:

Shreveport Fire Department ERP Letter

SHREVEPORT FIRE DEPARTMENT

263 N. Common Street
Shreveport, Louisiana 71101
(318) 673-6650 • FAX: (318) 673-6656

Kelvin J. Cochran, Fire Chief

September 06, 2007

Mr. George Cramer
Arcadis G&M, Inc.
10352 Plaza Americana Drive
Baton Rouge, La. 70816

Dear Mr. Cramer:

In response to your request dated July 23, 2007, this letter is to confirm that the Shreveport Fire Department, City of Shreveport Louisiana, is the sole provider for the Emergency Medical Services within the city limits of Shreveport including treatment and transport of emergency patients.

It has been determined that 687 Mt. Zion Road does fall within the city limits of Shreveport and all fire/ems related responses will be made to this address by the Shreveport Fire Department.

The Shreveport Fire Department is a Class 1 rated fire department and meets the requirements of NFPA Section 473 of the Life Safety Code. Also, the Shreveport Fire Department is capable of responding to a hazardous material incident in accordance with the definitions of 29 CFR 1910.120(a)(3):

> 1910.120(a)(3)
> ***Emergency response*** or ***responding to emergencies*** means a response effort by employees from outside the immediate release area or by other designated responders (i.e., mutual aid groups, local fire departments, etc.) to an occurrence which results, or is likely to result, in an uncontrolled release of a hazardous substance.

If you should need any additional information, please feel free to call my office at 318-673-6720

Nathan Tabor
Assistant Chief of EMS
Shreveport Fire Department

ARCADIS

Appendix I

Facility Implementation Plan

MT. ZION ROAD C & D SITE
D-017-2819 / OU-0155
CADDO PARISH, LOUISIANA

FACILITY IMPLEMENTATION PLAN
TYPE III SOLID WASTE DISPOSAL FACILITY
SEPTEMBER 2006

Prepared for:

MT. ZION C & D, LLC

Prepared by:

ARCADIS U.S., Inc.

Implementation Plan

Mt. Zion Road C & D Site

33:VII.521.I. Implementation Plan.

1. The implementation plans for all facilities must include the following:

   a. a construction schedule for existing facilities which shall include beginning and ending time-frames and time-frames for the installation of all major features such as installation of final cover, and

Cell No. 1 was constructed in 1994 in accordance with the provisions of the regulations and the original permit application. It has been operated since that time.

Cells No. 2 through 5 will be opened in succession as each active cell is closed. Because the specific beginning and ending time frames depend upon the level of activity of the site, the notification will be made as soon as beginning and ending dates are determined. Because this is a Type III facility, liners, collection systems, and monitor wells are not included in the design. Final cover will be placed as each cell is constructed. No more than 5 acres at one time will be without final cover.

   b. details on phased implementation if any proposed facility is to be constructed in phases.

This facility is to be constructed in phases as outlined above. The details on the implementation of each phase will be provided to the Administrative Authority prior to the beginning and end of each phase.

ARCADIS

Appendix J

Closure and Post-Closure Plan

MT. ZION ROAD C & D SITE
D-017-2819 / OU-0155
CADDO PARISH, LOUISIANA

FACILITY CLOSURE AND POST-CLOSURE PLAN
TYPE III SOLID WASTE DISPOSAL FACILITY
APRIL 2008

Prepared for:

MT. ZION C & D, LLC

Prepared by:

ARCADIS U.S., Inc.

CLOSURE AND POST-CLOSURE PLAN

Mt. Zion Road C & D Site

33:VII.721.D. Facility Closure Requirements.

1. Notification of Intent to Close a Facility. All permit holders shall notify the Administrative Authority in writing at least 90 days before closure or intent to close, seal, or abandon any individual units within a facility and shall provide the following information:

    a. date of planned closure;

    b. changes, if any, requested in the approved closure plan; and

    c. closure schedule.

Mt. Zion C & D, LLC (Mt. Zion), will submit a "Notice of Intent to Close" to the Louisiana Department of Environmental Quality (LDEQ) at least 90 days prior to its intent to close the Mt. Zion Road facility. The "Notice of Intent" will include the date of planned closure, the closure schedule, and any changes from the approved Closure Plan.

At this time, Mt. Zion will operate only 5 acres as an active cell at any given time. As the final waste elevations are reached in an area, the waste will be compacted and covered. At this time, the date of planned final closure of the last portion of the facility is estimated to be December 31, 2026. Final closure of the last unit will be accomplished within 90 days of reaching final grade.

2. Pre-Closure Requirements

    a. Final cover shall be applied within 30 days after final grades are reached in the active disposal unit of the facility. This deadline may be extended by the Administrative Authority, if necessary, due to inclement weather or other circumstances.

    b. Standing water within the active unit shall be solidified or removed prior to installing the final cover.

    c. The site runoff-diversion system shall be maintained until the last area is closed and the final cover is installed.

    d. The runoff-diversion system shall be maintained and modified to prevent overflow of the landfill to adjoining areas.

    e. Insect and rodent inspection is required to be documented before installation of final cover, and extermination measures must be provided, if required, according to the facility inspection.

f. Final machine compacting and grading shall be completed in each area before capping.

When final grade has been reached in a 5-acre unit of each cell (see sheet 8), the final cover consisting of 24 inches of compacted cover material will be applied to the 5 acres. Attachment A contains a conceptual closure design for the landfill. The anticipated final contours of the site are depicted on Sheet 5 of the design drawings. Any standing water will be solidified or removed. The compacted cover material will be installed by placing 6- to 8-inch loose lifts and compacting with existing equipment. Upon placing the 24 inches of compacted cover, Mt. Zion will place 6 inches of vegetated topsoil material, and seed the 5 acre unit.

The runoff-diversion system will be maintained until the final cover is installed over the entire waste disposal area or until the facility design can ensure that run-on/runoff water will not contact exposed waste material.

Because of the nature of waste material accepted in this Class III Landfill, insects and rodents are not anticipated to be a problem. However, an inspection will be conducted of each cell prior to its final cover being applied. If insects or rodents are noted, appropriate action will be taken to ensure their eradication.

3. Closure Requirements

a. Final Cover

i. Final cover shall consist of a minimum of 24 inches of silt clays and 6 inches of topsoil cover for supporting vegetative growth; however, other covers that provide a more practical answer and satisfy the purposes of minimizing fire hazards, odors, vector food and harborage, and infiltration of precipitation, as well as discouraging scavenging and limiting erosion, may be submitted for approval by the administrative authority.

ii. The side slope should be no steeper than 3(H):1(V) and must have a minimum of 4 percent slope on the top of the final cap.

iii. A combination of clay and synthetic material approved by the administrative authority may also be used as final cover.

b. After closure inspection and approval, the permit holder shall plant a ground cover to prevent erosion and to return the facility location to a more natural appearance.

c. The permit holder shall update the parish mortgage and conveyance records by entering the specific location of the facility and specifying that the property was used for the disposal of solid waste. The document shall identify the name and address of the person with knowledge of the contents of the facility. A form to be

used for this purpose is included in Attachment B. The facility shall provide the Solid Waste Division with a true copy of the document filed and certified by the Caddo Parish Clerk of Court.

Upon satisfactory completion of the pre-closure requirements, a 24-inch cover, consisting of silty clays or other soil material, shall be placed over the final cover. This material will be compacted using the facility equipment.

Once the 24-inch cover has been placed and compacted, 6 inches of topsoil will be placed over the area being closed. After the topsoil has been placed into position, the area will be seeded to provide ground cover or vegetative growth in order to minimize erosion problems.

If the closed cells have final elevations higher than the surrounding area, the side slope shall be no steeper than 3:1 (H:V).

The Administrative Authority will be notified of the completion of the cover and an inspection shall be conducted by a representative of the Administrative Authority. After the facility has been satisfactorily inspected, a suitable ground cover will be planted to prevent erosion and to return the facility location to a more natural appearance.

Upon satisfactory closure of the facility, the parish mortgage and conveyance records shall be updated by the submittal of the attached closure document to the Caddo Parish Clerk of Court.

4. Upon determination by the Administrative Authority that a facility has completed closure in accordance with an approved plan, the Administrative Authority may release the closure fund to the permit holder.

This requirement is acknowledged.

Facility Post-Closure Plan

5. Facility Post-Closure Requirements

   a. The time frame of post-closure care may be lengthened, if necessary to protect human health and the environment.

   b. The integrity of the grade and cap must be maintained for no less than three years after the date of the Administrative Authority's approval of the closure of the facility.

   c. Annual reports concerning the integrity of the cap shall be submitted to the Administrative Authority for a period of three years after closure.

To ensure the integrity of the cap, monthly inspections will be conducted for the first year following closure, and quarterly inspections will be conducted during the second and third years.

Annual reports will be submitted to the Administrative Authority during the post-closure care period. At the end of the third year, Mt. Zion C & D, LLC, will petition the Administrative Authority to declare the facility closed. Mt Zion C & D LLC understand that the post-closure period may be lengthened by the Administrative Authority if necessary to protect human health or the environment.

At this time, the long-term use of this facility is not known. The site will probably remain as a grassed area with limited use for storage of equipment. The site will be maintained in post-closure status for a minimum of three years and, if required by the Administrative Authority, this time may be extended. During the post-closure period, the cap and grade will be maintained. Each year during the post-closure period, annual reports will be filed with the Administrative Authority reporting on the integrity of the cap and site in general.

HARRELSON MATERIALS MANAGEMENT
CONSTRUCTION & DEMOLITION DEBRIS SPECIALISTS

August 27, 2007

Mr. David Strong
Mt. Zion C&D, LLC
687 Mt Zion Road
Shreveport, LA 71106

Re: Cover for Closure of Mt. Zion Road Landfill

Dear Mr. Strong:

Harrelson Materials Management, Inc. ("HMM") hereby agrees to sell Mt. Zion C&D, LLC and the Mt. Zion Road Landfill up to 30,000 cubic yards of 10-to-the-minus-6 or greater clay for cover purposes for $0/yard, FOB HMM landfill. HMM will load the clay on Mt. Zion-provided trucks for that price. The price is extended indefinitely, while HMM's majority owner owns the landfill site at 1101 Russell Road, and continues to partner in the Mt. Zion Road Landfill with you.

Best Regards,

Michael D. Harrelson
President

xc. Mr. George Cramer, ARCADIS U.S., Inc.

P.O. BOX 78102 ♦ 1101 RUSSELL ROAD ♦ SHREVEPORT, LA 71137-8102 ♦ 318-425-3218 OFFICE ♦ 318-425-5161 FAX

ATTACHMENT A

Conceptual Closure Design Drawings

DESIGN DRAWINGS OF:

MOUNT ZION C&D LANDFILL

Shreveport, Louisiana

INDEX

DRAWINGS ARE ISSUED FOR PERMITTING PURPOSES ONLY AND NOT FOR CONSTRUCTION.

STATE OF LOUISIANA
DANA A. LAWTON
REG. NO. 25872
REGISTERED PROFESSIONAL ENGINEER
IN CIVIL ENGINEERING
10/4/07

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004
FAX: 225-218-9677
WWW.ARCADIS-US.COM

REV.	ISSUED DATE	DESCRIPTION

SEAL

SHEET TITLE: TITLE SHEET

DRAWN BY	CHECKED	PROJECT MANAGER	DEPARTMENT MANAGER
S. MEN	D. LAWTON	G. CRAMER	G. CRAMER

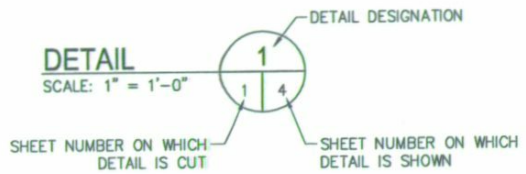
PROJECT TITLE/CLIENT: Mt. Zion C&D Landfill, 687 Mt. Zion Road, Shreveport, Louisiana

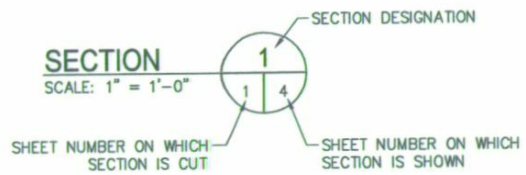
TASK/PHASE NUMBER	DATE
0001	4-16-07

PROJECT NUMBER	DRAWING NUMBER
LA002706.0001	1

ABBREVIATIONS AND SYMBOLS

SECTION/DETAIL KEY





ABBREVIATIONS

AFG	ABOVE FINISHED GRADE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
BLDG	BUILDING
CB	CATCH BASIN
CF	CUBIC FEET
CFS	CUBIC FEET PER SECOND
CO	CLEANOUT
CONC	CONCRETE
℄	CENTERLINE
C TO C	CENTER TO CENTER
DIA	DIAMETER
DWG	DRAWING
ELEV	ELEVATION
EXIST	EXISTING
FT	FEET
GAL	GALLONS
GPM	GALLONS PER MINUTE
HDPE	HIGH DENSITY POLYETHYLENE
HORZ	HORIZONTAL
ID	INSIDE DIAMETER
IN	INCHES
INV	INVERT
LB	POUNDS
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
MSL	MEAN SEA LEVEL
NOM	NOMINAL
NTS	NOT TO SCALE
OD	OUTSIDE DIAMETER
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE (PLASTIC)
RAD	RADIUS
SCHED	SCHEDULE
SDR	STANDARD DIMENSION RATIO
SPEC	SPECIFICATION
TYP	TYPICAL
VERT	VERTICAL

OWNER:
MT. ZION C & D, LLC.
687 MT. ZION ROAD
SHREVEPORT, LOUISIANA 71106
(318) 286-6882

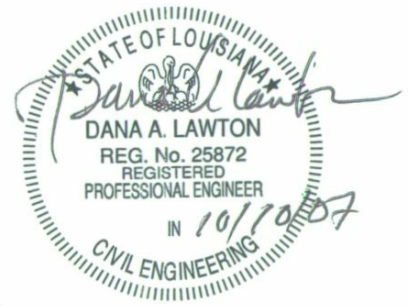
ENGINEER:
ARCADIS
ATTENTION: DANA LAWTON, P.E., PRINCIPAL PROJECT ENGINEER
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
PHONE: (225) 292-1004
FAX: (225) 218-9677

REGULATORY AUTHORITY:
LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL SERVICES
PHONE: (225) 219-3181

SYMBOLS

- EXISTING FENCE
- EXISTING BUILDING
- EXISTING GRAVEL ROAD
- EXISTING ASPHALT
- DRAINAGE WAY
- 170 EXISTING INDEX CONTOUR
- 180 EXISTING INTERMEDIATE CONTOUR
- 178 PROPOSED INDEX CONTOUR
- PROPOSED INTERMEDIATE CONTOUR
- G GAS LINE
- OHE OVERHEAD ELECTRIC
- UGE BURIED ELECTRIC
- RAILROAD TRACK
- 3:1 TYP FILL-SLOPE INDICATOR
- 3:1 TYP CUT-SLOPE INDICATOR
- PROPOSED ACCESS ROAD (GRAVEL)
- W WATERLINE
- WS=1294.6 WATER SURFACE ELEVATION
- X 175.2' EXISTING SPOT ELEVATION
- BM-1 PERMANENT SURVEY BENCHMARK
- N 1000 / E 1000 SITE GRID MARKER (1000 FT INTERVALS)
- B-15 GEOTECHNICAL BORING
- P-5 GROUNDWATER PIEZOMETER
- BM-1 SURVEY CONTROL POINT
- FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- POWER POLE
- DRAINAGE CULVERT
- M RIM=X INVERT=X OUTLET=X MANHOLE
- CATCH BASIN INLET
- GP BALLARD OR GUARD POST
- PREPARED SUBGRADE
- GENERAL FILL
- COMPACTED CLAY LINER OR BARRIER LAYER
- GRAVEL
- CONCRETE
- EXISTING WASTE
- INTERIM COVER
- TOP SOIL
- RIP-RAP

GENERAL NOTES



DRAWINGS ARE ISSUED FOR PERMITTING PURPOSES ONLY AND NOT FOR CONSTRUCTION.

REV.	ISSUED DATE	DESCRIPTION

KEYPLAN

SHEET TITLE

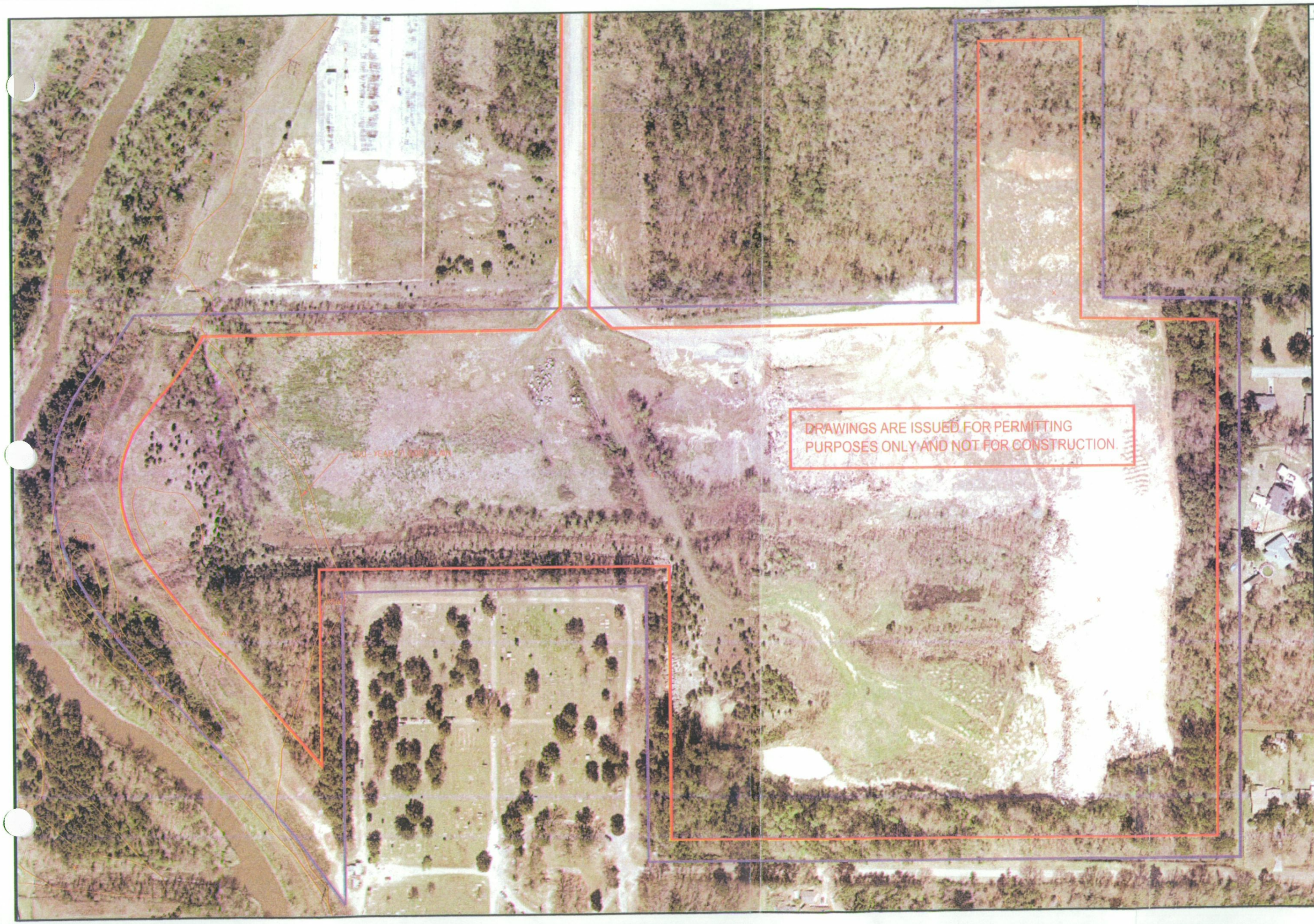
GENERAL LEGEND

PROJECT TITLE

Mt. Zion C&D Landfill
687 Mt. Zion Road
Shreveport, Louisiana

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004 FAX: 225-292-5210
WWW.ARCADIS-US.COM

SEAL	SEAL
PROJECT MANAGER: G. CRAMER	DEPARTMENT MANAGER: G. CRAMER
DATE: 4-16-07	CHECKED BY: D. LAWTON
TASK/PHASE NUMBER: 0001	DRAWN BY: S. MEN
PROJECT NUMBER: LA002706.0001	DRAWING NUMBER: 2



0 100 200

EXPLANATION:

PROPERTY LINE

SETBACK LINE

NOTE:

PROPERTY LINES ARE ESTIMATED ONLY.

REFERENCE:

USGS 2002 URBAN AREA HIGH RESOLUTION PROGRAM.

STATE OF LOUISIANA
DANA A. LAWTON
REG. No. 25872
REGISTERED
PROFESSIONAL ENGINEER
IN
5-1-07
CIVIL ENGINEERING

SHEET TITLE

APPROXIMATE LOCATION OF PROPERTY LINES, SETBACKS, AND 100-YEAR FLOOD PLAIN

PROJECT TITLE

Mt. Zion C&D Landfill
687 Mt. Zion Road
Shreveport, Louisiana

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004 FAX: 225-292-5210
WWW.ARCADIS-US.COM

SEAL	SEAL
PROJECT MANAGER G. CRANER	DEPARTMENT MANAGER G. CRANER
DATE 4-16-07	CHECKED BY D. LAWTON
TASK/PHASE NUMBER 0001	DRAWN BY S. NEN
PROJECT NUMBER LA002706.0001	DRAWING NUMBER 3

DRAWINGS ARE ISSUED FOR PERMITTING PURPOSES ONLY AND NOT FOR CONSTRUCTION.

REFERENCE:

ELEVATION CONTOURS, (ARCINFO), TASK AREA 25 – SHREVEPORT–MINDEN, LOUISIANA, LOUISIANA / FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) PROJECT – PHASE 4 OF LOUISIANA LIDAR DATA DEVELOPMENT: CADDO, BOSSIER, & WEBSTER PARISHES, LOUISIANA UNDER THE WATERSHED CONCEPTS CONTRACT NUMBER EMT–2002–CO–0048, DATED MAY 2005.

APPROXIMATE LIMITS OF ACTIVE WASTE DISPOSAL

0 100 200

EXPLANATION:

PROPERTY LINE

SETBACK LINE

NOTE:

PROPERTY LINES ARE ESTIMATED ONLY.

STATE OF LOUISIANA
DANA A. LAWTON
REG. No. 25972
REGISTERED PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
10/26/07

SHEET TITLE

ESTIMATED EXISTING TOPOGRAPHY

PROJECT TITLE

Mt. Zion C&D Landfill
687 Mt. Zion Road
Shreveport, Louisiana

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225–292–1004 FAX: 225–292–5210
WWW.ARCADIS–US.COM

SEAL	SEAL
PROJECT MANAGER: G. CRAMER	DEPARTMENT MANAGER: G. CRAMER
DATE: 4–16–07	CHECKED BY: D. LAWTON
TASK/PHASE NUMBER: 0001	DRAWN BY: S. MEN
PROJECT NUMBER: LA002706.0001	DRAWING NUMBER: 4

DRAWINGS ARE ISSUED FOR PERMITTING PURPOSES ONLY AND NOT FOR CONSTRUCTION.

CONTRACTOR TO TIE INTO EXISTING CONTOURS AND MAINTAIN A MINIMUM OF 4% FINAL GRADE.

REFERENCE:

NATIONAL FLOOD INSURANCE PROGRAM, COUNTYWIDE FLOOD INSURANCE RATE MAP, PANEL 469 OF 800, APRIL 6, 2000.

CONTRACTOR TO TRANSITION INTO PERIMETER DITCH

PERIMETER DITCH TO BE CONSTRUCTED AT CLOSURE. DESIGN TO BE COMPLETED AT CLOSURE.

APPROXIMATE LIMITS OF ACTIVE WASTE DISPOSAL

100-YEAR FLOOD PLAIN

0.01%

4% MIN.

A

A'

B

B'

0 100 200

EXPLANATION:

PROPERTY LINE
SETBACK LINE
195 FEET MSL

NOTE:
*ACTUAL FINAL GRADE TO BE DETERMINED AT CLOSURE BASED ON A MINIMUM 4% TOP SLOPE AND A MAXIMUM 3:1 SIDE SLOPE.

PROPERTY LINES ARE ESTIMATED ONLY.

STATE OF LOUISIANA
DANA A. LAWTON
REG. No. 25872
REGISTERED PROFESSIONAL ENGINEER
IN CIVIL ENGINEERING
9/12/07

SHEET TITLE

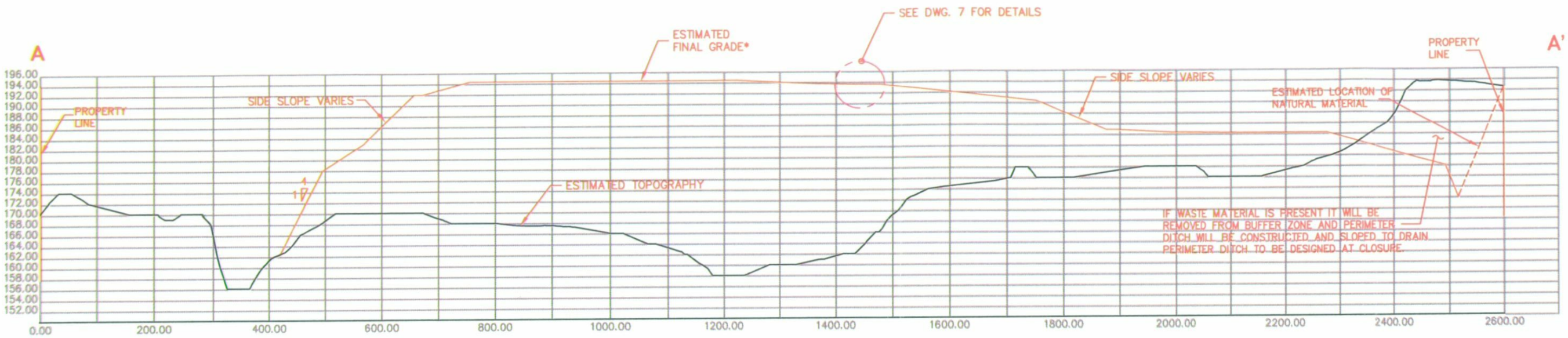
ESTIMATED FINAL GRADING PLAN

PROJECT TITLE

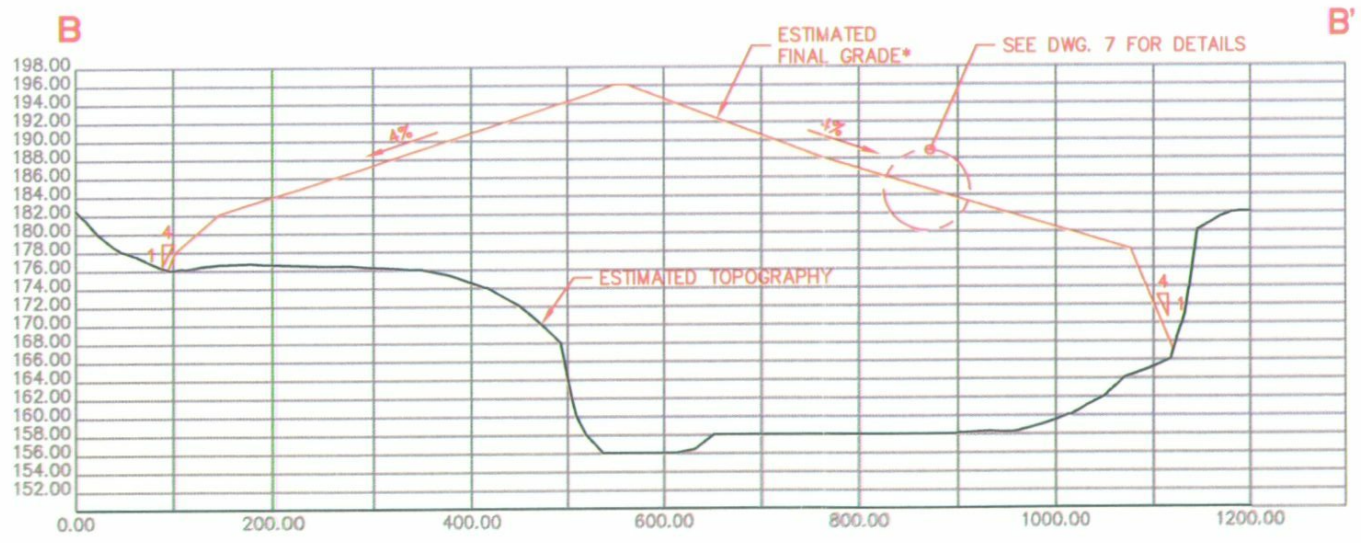
Mt. Zion C&D Landfill
687 Mt. Zion Road
Shreveport, Louisiana

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004
FAX: 225-218-9677
WWW.ARCADIS-US.COM

SEAL	SEAL
PROJECT MANAGER: G. CRAMER	DEPARTMENT MANAGER: G. CRAMER
DATE: 4-12-07	CHECKED BY: DAL
TASK/PHASE NUMBER: 0001	DRAWN BY: S. MEN
PROJECT NUMBER: LA002706.0001	DRAWING NUMBER: 5



SECTION A-A'



SECTION B-B'

NOTE:
*ACTUAL FINAL GRADE TO BE DETERMINED AT CLOSURE BASED ON A MINIMUM 4% TOP SLOPE AND A MAXIMUM 3:1 SIDE SLOPE.

STATE OF LOUISIANA
DANA A. LAWTON
REG. NO. 25872
REGISTERED PROFESSIONAL ENGINEER
IN CIVIL ENGINEERING
10/16/07

DRAWINGS ARE ISSUED FOR PERMITTING PURPOSES ONLY AND NOT FOR CONSTRUCTION.

HOR. SCALE
0 100 200
VERT. SCALE
0 10 20

REV.	ISSUED DATE	DESCRIPTION

KEYPLAN

SHEET TITLE

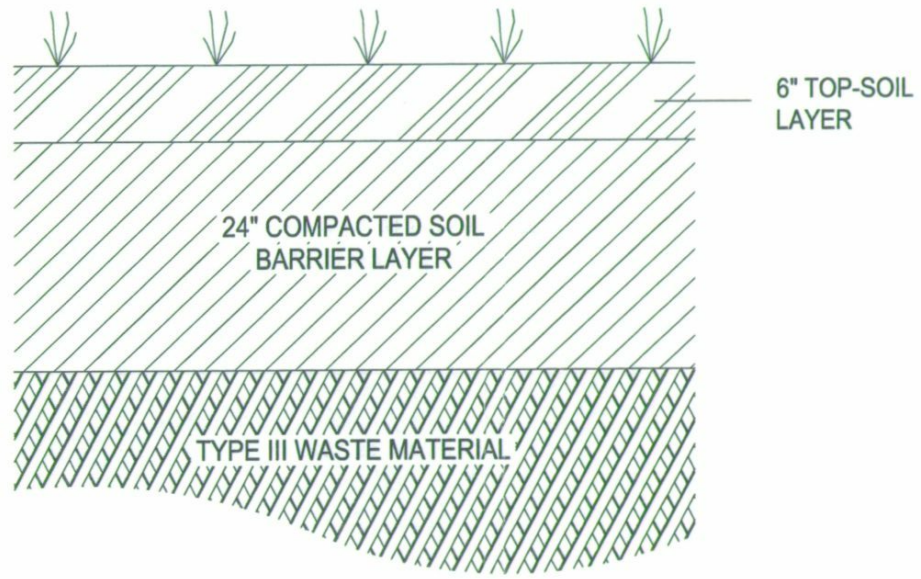
CROSS-SECTIONS

PROJECT TITLE

Mt. Zion C&D Landfill
687 Mt. Zion Road
Shreveport, Louisiana

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004
FAX: 225-218-9677
WWW.ARCADIS-US.COM

SEAL	SEAL
PROJECT MANAGER: G. CRAMER	DEPARTMENT MANAGER: G. CRAMER
DATE: 4-12-07	CHECKED BY: DAL
TASK/PHASE NUMBER: 0001	DRAWN BY: S. MEN
PROJECT NUMBER: LA002706.0001	DRAWING NUMBER: 6



TYPICAL FINAL COVER DETAIL

DETAIL 1/6/7

SCALE: NTS

DRAWINGS ARE ISSUED FOR PERMITTING PURPOSES ONLY AND NOT FOR CONSTRUCTION.

REV.	ISSUED DATE	DESCRIPTION

KEYPLAN

SHEET TITLE

DETAILS

PROJECT TITLE

Mt. Zion C&D Landfill
687 Mt. Zion Road
Shreveport, Louisiana

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004 FAX: 225-292-5210
WWW.ARCADIS-US.COM

SEAL	SEAL
PROJECT MANAGER: G. CRAMER	DEPARTMENT MANAGER: G. CRAMER
DATE: 4-16-07	CHECKED BY: D. LAWTON
TASK/PHASE NUMBER: 0001	DRAWN BY: S. MEN
PROJECT NUMBER: LA002706.0001	DRAWING NUMBER: 7

DRAWINGS ARE ISSUED FOR PERMITTING PURPOSES ONLY AND NOT FOR CONSTRUCTION.

REFERENCE

ELEVATION CONTOURS, (ARCINFO), TASK AREA 25 - SHREVEPORT-MINDEN, LOUISIANA, LOUISIANA / FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) PROJECT - PHASE 4 OF LOUISIANA LIDAR DATA DEVELOPMENT: CADDO, BOSSIER, & WEBSTER PARISHES, LOUISIANA UNDER THE WATERSHED CONCEPTS CONTRACT NUMBER EMT-2002-CO-0048, DATED MAY 2005

CELL 1 (AT FINAL GRADE)

CELL 2 (ACTIVE)

CELL 3 (FILL AFTER CELL 2)

CELL 4 (FILL AFTER CELL 3)

CELL 5 (FILL AFTER CELL 4)

APPROXIMATE LIMITS OF ACTIVE WASTE DISPOSAL

0 100 200

EXPLANATION:

PROPERTY LINE

SETBACK LINE

NOTE:

PROPERTY LINES ARE ESTIMATED ONLY.

STATE OF LOUISIANA
DANA D. LAWTON
REG. No. 25872
REGISTERED PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
4/16/7

SHEET TITLE

PLANNED FILL SEQUENCE

PROJECT TITLE

Mt. Zion C&D Landfill
687 Mt. Zion Road
Shreveport, Louisiana

ARCADIS
10352 PLAZA AMERICANA DRIVE
BATON ROUGE, LA 70816
TEL: 225-292-1004 FAX: 225-292-5210
WWW.ARCADIS-US.COM

SEAL	SEAL
PROJECT MANAGER: G. CRAMER	DEPARTMENT MANAGER: G. CRAMER
DATE: 4-16-07	CHECKED BY: D. LAWTON
TASK/PHASE NUMBER: 0001	DRAWN BY: S. MEN
PROJECT NUMBER: LA002706.0001	DRAWING NUMBER: 8

ATTACHMENT B

Closure Document

Document to be Filed in the Parish Records upon Final Closure of a Solid Waste Disposal Facility

Mt. Zion Road C & D Site

Mr. Zion C & D, LLC, hereby notifies the public that the following described property was used for the disposal of solid waste. This site was closed on _____ (date facility was closed) in accordance with the Louisiana Administrative Code, Title 33, Part VII. Inquiries regarding the contents of the Mt. Zion Road C & D Site may be directed to Michael Harrelson at 687 Mt. Zion Road, Shreveport, LA.

Property Description (Provide the specific description of the facility)

_____

Signature of Person Filing Parish Record

Typed Name and Title of Person Filing Parish Record

Date

(A true copy of the document must be certified by the Parish Clerk of Court)

ARCADIS

Appendix K

Closure and Post-Closure
Cost Estimates

Mt. Zion C & D, LLC
Mt. Zion Road Type III Solid Waste Facility
Caddo Parish, Louisiana

CLOSURE COST ESTIMATE
Current Extent of Landfill

Current Area with Final Cover = ~ 1 acre
Current Area with Interim Cover = ~ 5 acres

Equipment Mobilization/Demobilization	$1,500
Clay for Cap (2 feet over 4 acres = 12,800 yards^3) @ $7/yard^3	$90,160
Bulldozer + Operator @ $85/hour X 160 hours	$13,600
Loader + Operator @ $98/hour X 120 hours	$11,760
Top Soil (0.5 foot over 4 acres = 3,120 yard^3) @ $9/yard	$28,080
Seed @ $500/acre X 5 acres	$2,500
SUBTOTAL	$147,600
Oversight @ 10%	$14,760
Expendables @ $250/day X 20 days	$2,500
Surveyor	$2,000
Deed Notification	$500
TOTAL	**$167,360**

Mt. Zion C & D, LLC
Mt. Zion Road Type III Solid Waste Facility
Caddo Parish, Louisiana

POST CLOSURE COST ESTIMATE

Mowing and Clearing ($10,000/year X 3 years)	$30,000
Engineer's Inspection and Certification ($2,500/year X 3 years)	$7,500
Cap and Fence Repair (estimated $1,000/year X 3 years)	$3,000
TOTAL	**$40,500**

HARRELSON MATERIALS MANAGEMENT
CONSTRUCTION & DEMOLITION DEBRIS SPECIALISTS

August 27, 2007

Mr. David Strong
Mt. Zion C&D, LLC
687 Mt Zion Road
Shreveport, LA 71106

Re: Cover for Closure of Mt. Zion Road Landfill

Dear Mr. Strong:

Harrelson Materials Management, Inc. ("HMM") hereby agrees to sell Mt. Zion C&D, LLC and the Mt. Zion Road Landfill up to 30,000 cubic yards of 10-to-the-minus-6 or greater clay for cover purposes for $0/yard, FOB HMM landfill. HMM will load the clay on Mt. Zion-provided trucks for that price. The price is extended indefinitely, while HMM's majority owner owns the landfill site at 1101 Russell Road, and continues to partner in the Mt. Zion Road Landfill with you.

Best Regards,

Michael D. Harrelson
President

xc. Mr. George Cramer, ARCADIS U.S., Inc.

P.O. BOX 78102 ♦ 1101 RUSSELL ROAD ♦ SHREVEPORT, LA 71137-8102 ♦ 318-425-3218 OFFICE ♦ 318-425-5161 FAX

ARCADIS

Appendix L

Financial Assurance Documentation

LDEQ RECEIPT

B. Appendix B

SOLID WASTE FACILITY
CERTIFICATE OF LIABILITY INSURANCE 2008 JUL 23 AM 9 47

Secretary
Louisiana Department of Environmental Quality
Post Office Box 4313
Baton Rouge, Louisiana 70821-4313

Attention: Office of Environmental Services,
Waste Permits Division

RE: Mt. Zion Road C&D Site, Agency Interest #52368, PER20050001

Dear Sir:

1. Evanston Insurance Company, the "insurer," of Ten Parkway North, Deerfield, IL 60015 hereby certifies that it has issued liability insurance covering bodily injury and property damage to Mt. Zion C&D, LLC, the "insured," of 687 Mt. Zion Road, Shreveport, LA 71106 in connection with the insured's obligation to demonstrate financial responsibility under LAC 33:VII.1301. The coverage applies at Mt. Zion Road C&D Site, Agency Interest #52368, Site Id. No. D-017-2819, Facility Permit Activity No. PER 20050001, 687 Mt. Zion Road, Shreveport, LA, 71106 for sudden and accidental occurrences. The limits of liability are $1,000,000 per each occurrence and $2,000,000 annual aggregate, per site, exclusive of legal-defense costs. The coverage is provided under policy number 08PKG01288, issued on 07/14/08. The effective date of said policy is 07/14/08.

2. The insurer further certifies the following with respect to the insurance described in Paragraph 1:

(a). Bankruptcy or insolvency of the insured shall not relieve the insurer of its obligations under the policy.

(b). The insurer is liable for the payment of amounts within any deductible applicable to the policy, with a right of reimbursement by the insured for any such payment made by the insurer. This provision does not apply with respect to that amount of any deductible for which coverage is demonstrated, as specified in LAC 33:VII.1301.B.2, 3, or 4.

(c). Whenever requested by the administrative authority, the insurer agrees to furnish to him a signed duplicate original of the policy and all endorsements.

(d). Cancellation of the insurance, whether by the insurer or the insured, will be effective only upon written notice and upon lapse of 60 days after a copy of such written notice is received by the administrative authority.

(e). Any other termination of the insurance will be effective only upon written notice and upon lapse of 30 days after a copy of such written notice is received by the administrative authority.

3. I hereby certify that the wording of this certificate is identical to the wording specified in LAC 33:VII.1399.Appendix B as such regulations were constituted on the date first written above, and that the insurer is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or more states, and is admitted, authorized, or eligible to conduct insurance business in the state of Louisiana.

Amy Gamgee

Amy Gamgee
Underwriter – Environmental Department
310 Highway 35 South, Red Bank, NJ 07701

ACORD CERTIFICATE OF LIABILITY INSURANCE

OP ID UA HARRE-9 | DATE (MM/DD/YYYY) 08/17/07

PRODUCER

ICT Ins DBA Regions Ins - SH
2020 E. 70th Street, Suite 304
Shreveport LA 71105
Phone: 318-797-7400 Fax: 318-797-7470

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED

Harrelson & Associates, LLC.
Louisiana Environmental Servcs
Harrelson Materials Managemt
CrocPot, LLC, Mt Zion C&D LLC
PO Box 78102
Shreveport LA 71137-8102

INSURERS AFFORDING COVERAGE		NAIC #
INSURER A:	Evanston Insurance Co	35378
INSURER B:	The Hanover Ins Company	22292
INSURER C:	LEMIC Insurance Co	
INSURER D:	Praetorian Specialty Ins Co	44776
INSURER E:		

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A	X	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS MADE [X] OCCUR	07PKG01288	07/14/07	07/14/08	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurence) MED EXP (Any one person)	$1,000,000. $50,000. $5,000.
A		X CLAIMS MADE SITE POLLUTION LIABILITY INCLUDED		07/14/07	07/14/08	PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$1,000,000. $2,000,000. $2,000,000
		GEN'L AGGREGATE LIMIT APPLIES PER: POLICY PRO-JECT LOC					
D	X	AUTOMOBILE LIABILITY ANY AUTO ALL OWNED AUTOS X SCHEDULED AUTOS X HIRED AUTOS X NON-OWNED AUTOS	PSILA0002662	07/14/07	07/14/08	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$1,000,000. $ $ $
		GARAGE LIABILITY ANY AUTO				AUTO ONLY - EA ACCIDENT OTHER THAN AUTO ONLY: EA ACC AGG	$ $ $
		EXCESS/UMBRELLA LIABILITY OCCUR CLAIMS MADE DEDUCTIBLE RETENTION $				EACH OCCURRENCE AGGREGATE	$ $
C		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below	WCL07LA01562CAP	06/09/07	06/09/08	X WC STATU-TORY LIMITS OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $1000000 $1000000 $1000000
B		OTHER Equipment Floater	IHO836504901	07/14/07	07/14/08	Per Sched	$2,500 Ded
D		Auto Phys Dam	PSILA0002662	07/14/07	07/14/08	Per Sched	Per Sched

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

Coverage is subject to policy terms, conditions and limitations unless otherwise cancelled. Certificate holder is an additional insured ATIMA.

CERTIFICATE HOLDER

REFIMO2

Regions Financial Corp., Its
Subsidiaries & Affiliates
Attn: Jason 334-517-3008
P. O. Box 1203
Montgomery AL 36102

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATI DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 10 DAYS WRITTEI NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHAI IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

William D. Painter

SUMMARY OF INSURANCE

Prepared: 08/17/07

For: Harrelson & Associates, LLC.
HMM,LES,CrocPot & Mt Zion C&D
PO Box 78102
Shreveport, LA
71137-8102 318-425-3218

ICT Ins DBA Regions Insurance
405 East St Peter Street
New Iberia, LA
70560 337-365-5426

Coverage	Amount	Company	Policy No	Eff	Exp	Premi
Equipment Floater		The Hanover Ins Company	IHO836504900	07/14/07	07/14/08	7446.(

Coverage/ Deductible
SPECIAL FORM. NOTE: POLICY INCLUDES PROPERTY FLOATER FOR OFFICE & CONTENTS.
$1,000 DED.
% Coinsurance
* See Attached Equipment Schedule

SUMMARY OF INSURANCE

Prepared 08/17/07

For: Harrelson & Associates, LLC.
HMM,LES,CrocPot & Mt Zion C&D
PO Box 78102
Shreveport, LA
71137-8102 318-425-3218

ICT Ins DBA Regions Insurance
405 East St Peter Street
New Iberia, LA
70560 337-365-5426

Equipment Floater Equipment Schedule

Policy No. IHO836504900

No.	Year	Description	ID/Serial Number	Date Purchased	New/Used	Amount of Insurance
001	1998	Type: LINKBELT MODEL 3400Q EXCAVATOR Manufacturer: Model: Other: Capacity:	E718-9124	03/29/02	U	45,000.
003	2002	Type: BOMAG TRASH COMPACTOR MDL BC671R Manufacturer: Model: Other: Capacity:	B01570421037	11/26/02	N	250,000.
004	2001	Type: 160LX LINKBELT EXCAVATOR Manufacturer: Model: Other: Capacity:	K2J15857	02/10/03	U	50,000.
005	1991	Type: FORD DUMP TRUCK NOTLIC FOR ROAD USE Manufacturer: Model: Other: Capacity:	FDYY95XXMVA33646	03/29/02	U	16,000.
006	2004	Type: 8 30 YARD BATHTUB STYLE METAL CONTAINERS Manufacturer: Model: Other: Capacity:	[illegible]	12/01/04	N	28,800.
008	2005	Type: 8 30 YD BATHTUB STYLE METAL CONTAINERS Manufacturer: Model: Other: Capacity:	[illegible]NE		N	28,800
	2006	Type: 2 MODEL SC-02-34 COMPACTORS Manufacturer: Model: Other: Capacity:			N	34,000
010	1995	Type: JD DOZER MODEL 550G Manufacturer: Model: Other: Capacity:	TO550GH804498	08/10/05	U	25,000
011	1999	Type: KOBELCO TRACKHOE MODEL SK130 Manufacturer: Model: Other: Capacity:	YPU2192	08/10/05	U	25,000
012	2005	Type: VACUUM PUMP & TANK Manufacturer: Model: Other: Capacity:	2005-1050-5	02/08/06	N	7,700
013	2006	Type: POWER WASH UNIT M/OTRLR 5FHUF16226 Manufacturer: Model: Other: Capacity:	A001035 S/N 96460	02/08/06	N	10,500
014	2006	Type: CAT DOZER D4GLGP Manufacturer: Model: Other: Capacity:	TLX00974	04/26/06	N	105,000
015	1999	Type: OFFICE BUILDING & CONTENTS Manufacturer: Model:				21,025

For: Harrelson & Associates, LLC.
HMM,LES,CrocPot & Mt Zion C&D
PO Box 78102
Shreveport, LA
71137-8102 318-425-3218

ICT Ins DBA Regions Insurance
405 East St Peter Street
New Iberia, LA
70560 337-365-5426

Equipment Floater Equipment Schedule (Continued)

Policy No. IHO836504900

Unit #	Year	Description	ID/Serial Number	Date Purchased	New/Used	Amt to Insure
		Other: Capacity:				
016	2006	Type: CAT 939C TRACK LOADER Manufacturer: CATERPILLAR Model: 939C Other: Capacity:	6DS01849	03/28/07	N	134,664
017	1998	Type: JD Trackhoe Manufacturer: John Deere Model: 160 Other: Capacity:	P00160X040538			52,000

SOLID WASTE FACILITY
TRUST AGREEMENT

Mt. Zion Road C&D Site, Agency Interest Number 52368, OU-0155/D-017-2819/PER20050001

This Trust Agreement, the "Agreement" is entered into as of September 28, 2007 by and between Mt. Zion C&D, LLC, a Louisiana corporation, the "Grantor," and Trust One Bank, incorporated in the state of Tennessee, the "Trustee."

WHEREAS, the Department of Environmental Quality of the State of Louisiana, an agency of the state of Louisiana, has established certain regulations applicable to the Grantor, requiring that a permit holder or applicant for a permit of a solid waste processing or disposal facility shall provide assurance that funds will be available when needed for closure and/or post-closure care of the facility;

WHEREAS, the Grantor has elected to establish a trust to provide all or part of such financial assurance for the facility identified herein;

WHEREAS, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this Agreement, and the Trustee is willing to act as trustee.

NOW, THEREFORE, the Grantor and the Trustee agree as follows:

SECTION 1. DEFINITIONS

As used in this Agreement:

(a). The term *Grantor* means the permit holder or applicant who enters into this Agreement and any successors or assigns of the Grantor.

(b). The term *Trustee* means the Trustee who enters into this Agreement and any successor trustee.

(c). The term *Secretary* means the Secretary of the Louisiana Department of Environmental Quality.

(d). The term *Administrative Authority* means the Secretary or his designee or the appropriate assistant secretary or his designee.

SECTION 2. IDENTIFICATION OF FACILITIES AND COST ESTIMATES

This Agreement pertains to the facilities and cost estimates identified on attached Schedule A.

SECTION 3. ESTABLISHMENT OF FUND

The Grantor and the Trustee hereby establish a trust fund, the "Fund", for the benefit of the Louisiana Department of Environmental Quality. The Grantor and the Trustee intend that no third party shall have access to the Fund except as herein provided. The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule B attached hereto. Such property and any other property subsequently transferred to the Trustee is referred to as the Fund, together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, in trust, as hereinafter provided. The Trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilities of the Grantor established by the administrative authority.

SECTION 4. PAYMENT FOR CLOSURE AND/OR POST-CLOSURE CARE OR LIABILITY COVERAGE

The Trustee shall make payments from the Fund as the administrative authority shall direct, in writing, to provide for the payment of the costs of closure and/or post-closure care of the facility covered by this Agreement. The Trustee shall reimburse the Grantor or other persons as specified by the administrative authority from the Fund for closure and/or post-closure expenditures in such amounts as the administrative authority shall direct in writing. In addition, the Trustee shall refund to the Grantor such amounts as the administrative authority specifies in writing. Upon refund, such funds shall no longer constitute part of the Fund as defined herein.

SECTION 5. PAYMENTS COMPRISED BY THE FUND

Payments made to the Trustee for the Fund shall consist of cash or securities acceptable to the Trustee.

SECTION 6. TRUSTEE MANAGEMENT

The Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this Section. In investing, reinvesting, exchanging, selling, and managing the Fund, the Trustee shall discharge his duties with respect to the trust fund solely in the interest of the beneficiary and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of like character and with like aims, except that:

(a). Securities or other obligations of the Grantor, or any owner of the facility or any of their affiliates, as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-2.(a), shall not be acquired or held, unless they are securities or other obligations of the federal or a state government;

(b). The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the federal or state government; and

(c). The Trustee is authorized to hold cash awaiting investment or distribution, uninvested for a reasonable time and without liability for the payment of interest thereon.

SECTION 7. COMMINGLING AND INVESTMENT

The Trustee is expressly authorized, at its discretion:

(a). To transfer from time to time any or all of the assets of the Fund to any common, commingled, or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all provisions thereof, to be commingled with the assets of other trusts participating therein; and

(b). To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U.S.C. 80a-1, et seq., including one which may be created, managed, or underwritten, or one to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote such shares at its discretion.

SECTION 8. EXPRESS POWERS OF TRUSTEE

Without in any way limiting the powers and discretion conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

(a). To sell, exchange, convey, transfer, or otherwise dispose of any property held by it, by public or private sale. No person dealing with the Trustee shall be bound to see to the application of the purchase money or to inquire into the validity or expediency of any such sale or other disposition;

(b). To make, execute, acknowledge, and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;

(c). To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depository with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentality thereof, with a Federal Reserve Bank, but the books and records of the Trustee shall at all times show that all securities are part of the Fund;

(d). To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the federal or state government; and

(e). To compromise or otherwise adjust all claims in favor of, or against, the Fund.

SECTION 9. TAXES AND EXPENSES

All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and other proper charges and disbursements of the Trustee shall be paid from the Fund.

SECTION 10. ANNUAL VALUATION

The Trustee shall annually, at least 30 days prior to the anniversary date of establishment of the Fund, furnish to the Grantor and to the administrative authority a statement confirming the value of the Trust. Any securities in the Fund shall be valued at market value as of no more than 60 days prior to the anniversary date of establishment of the Fund. The failure of the Grantor to object in writing to the Trustee, within 90 days after the statement has been furnished to the Grantor and the administrative authority, shall constitute a conclusively binding assent by the Grantor, barring the Grantor from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

SECTION 11. ADVICE OF COUNSEL

The Trustee may from time to time consult with counsel, who may be counsel to the Grantor, with respect to any questions arising as to the construction of this Agreement or any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

SECTION 12. TRUSTEE COMPENSATION

The Trustee shall be entitled to reasonable compensation for its services, as agreed upon in writing from time to time with the Grantor.

SECTION 13. SUCCESSOR TRUSTEE

The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor trustee and this successor accepts the appointment. The successor trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor trustee's acceptance of the appointment, the Trustee shall assign, transfer, and pay over to the successor trustee the funds and properties then constituting the Fund. If for any reason the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall, in writing, specify to the Grantor, the administrative authority, and the present Trustee, by certified mail 10 days before such change becomes effective, the date on which it assumes administration of the trust. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section shall be paid as provided in Section 9.

SECTION 14. INSTRUCTIONS TO THE TRUSTEE

All orders, requests, and instructions by the Grantor to the Trustee shall be in writing, signed by the persons designated in the attached Exhibit A or such other persons as the Grantor may designate by amendment to Exhibit A. The Trustee shall be fully protected in acting without inquiry in accordance with the Grantor's orders, requests, and instructions. All orders, requests, and instructions by the administrative authority to the Trustee shall be in writing and signed by the administrative authority. The Trustee shall act and shall be fully protected in acting in accordance with such orders, requests, and instructions. The Trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or termination of the authority of any person to act on behalf of the Grantor or administrative authority hereunder has occurred. The Trustee shall have no duty to act in the absence of such orders, requests, and instructions from the Grantor and/or administrative authority, except as provided for herein.

SECTION 15. NOTICE OF NONPAYMENT

The Trustee shall notify the Grantor and the administrative authority, by certified mail, within 10 days following the expiration of the 30-day period after the anniversary of the establishment of the Trust, if no payment is received from the Grantor during that period. After the pay-in period is completed, the Trustee shall not be required to send a notice of nonpayment.

SECTION 16. AMENDMENT OF AGREEMENT

This Agreement may be amended by an instrument, in writing, executed by the Grantor, the Trustee, and the administrative authority, or by the Trustee and the administrative authority, if the Grantor ceases to exist.

SECTION 17. IRREVOCABILITY AND TERMINATION

Subject to the right of the parties to amend this Agreement, as provided in Section 16, this Trust shall be irrevocable and shall continue until terminated at the written agreement of the Grantor, the Trustee, and the administrative authority, or by the Trustee and the administrative authority, if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, shall be delivered to the Grantor.

SECTION 18. IMMUNITY AND INDEMNIFICATION

The Trustee shall not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this Trust, or in carrying out any direction by the Grantor or the administrative authority issued in accordance with this Agreement. The Trustee shall be indemnified and saved harmless by the Grantor or from the Trust Fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all reasonable expenses incurred in its defense in the event that the Grantor fails to provide such defense.

SECTION 19. CHOICE OF LAW

This Agreement shall be administered, construed, and enforced according to the laws of the state of Louisiana.

SECTION 20. INTERPRETATION

As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each Section of this Agreement shall not affect the interpretation or the legal efficacy of this Agreement.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their respective officers duly authorized, and their corporate seals to be hereunto affixed, and attested to as of the date first above written. The parties below certify that the wording of this Agreement is identical to the wording specified in LAC 33:VII.1399.Appendix D, on the date first written above.

WITNESSES:

Julia Pilcher

Susan Briggs

GRANTOR:

By: MICHAEL HARRELSON

Its: Co-Manager

[Seal]

TRUSTEE:

Trust One Bank

By: Tom Simpson

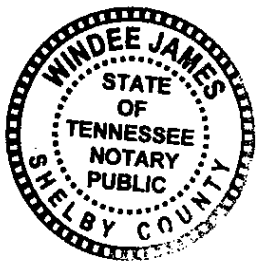
Its: Tom Simpson, SVP

[Seal]

THUS DONE AND PASSED in my office in Tennessee, on the 28th day of September, 20 07, in the presence of Susan Briggs and Julia Pilcher, competent witnesses, who hereunto sign their names with the said appearers and me, Notary, after reading the whole.

Windee James

Notary Public



CERTIFICATION OF ACKNOWLEDGEMENT

STATE OF LOUISIANA

PARISH OF _____

BE IT KNOWN, that on this 28 day of Sept., 20 07, before me, the undersigned Notary Public, duly commissioned and qualified within the State and Parish aforesaid, and in the presence of the witnesses hereinafter named and undersigned, personally came and appeared Michael Harris to me well known, who declared and acknowledged that he had signed and executed the foregoing instrument as his act and deed, and as the act and deed of the Mt Zion CED, LLC, a corporation, for the consideration, uses, and purposes and on terms and conditions therein set forth.

And the said appearer, being by me first duly sworn, did depose and say that he is the ~~President~~ Co-Mgr of said corporation and that he signed and executed said instrument in his said capacity, and under authority of the Board of Directors of said corporation.

Thus done and passed in the State and Parish aforesaid, on the day and date first hereinabove written, and in the presence of Julia Pilcher and Susan Griggs, competent witnesses, who have hereunto subscribed their name as such, together with said appearer and me, said authority, after due reading of the whole.

WITNESSES:

Julia Pilcher

Susan Griggs

NOTARY PUBLIC:

Windee James

WINDEE JAMES
STATE OF TENNESSEE
NOTARY PUBLIC
SHELBY COUNTY

Schedule A

Mt. Zion Road C&D Site
687 Mt. Zion Road
Shreveport, Louisiana 71107

Agency Interest No. 52368, OU-0155/D-017-2819/PER20050001

Current Closure Estimate: $167,360.00
Current Post-Closure Estimate: $40,500.00

Schedule B

Property Deposited in Trust: $43,466.54

As evidenced by See attached

Exhibit A

Michael D. Harrelson

DEPOSIT SYSTEM ACCOUNT INQUIRY TRIAL BALANCE 10:55:38 07/24/0
ACCOUNT: 1118439 INQUIRY: 202 SEARCH: AUTHORITY: 0
NAME: MT. ZION FINANCIAL ASSUR MONEY MARKET ACCOUNT

BRANCH: 1	OPEN DATE: 09-14-2007	LEDGER: 35,820.01
TYPE ACCT: 096	OFFICERS: 00237 00144	CURBAL: 43,433.01
STATUS: X7	SERV CHG: 096	AVAIL: 35,820.01
DATE LST TRAN: 10-31-07	CHG/NO CHG: 1	REL AVAIL: .00
DATE LST STMT: 06-30-08	ANL CYC: 031	AV LED: 18,952
DATE LST DEP: 04-29-08	STMT CYC: 031	OD CODE: 0
LAST DEP: 28,915.00	TIMES OD-Y:	OD LIMIT:
STOPS: N HOLDS: N	RETURNS-Y:	STMT ENC:
# DEBITS:	# CREDITS:	
		TIMES TRANS:
CONS OD: 0	DORM S/C: .00	PND STMT CYC: 031
LAST CONTACT: 10-31-07	DATE LAST MAINT:06-10-08	DORM INT: .00
UAF EXCEP TERM: 0	UAF LIMIT: 99999999999	CLSE BAL:43,466.54
		ACTION CODE: 0
AVAIL SCHEDULE: 001	AVL EXCPN DATE: 00-00-00	LAST OD/NSF: 00-00-00
TIN: F 81-0676429		AVL EXCPN PLAN: 000
ESCBAL: .00	POST ACH: Y	MARKET: 0000
FLEX TYPE CHG/NO CHG: 1		

STATUS CODE ON THIS ACCOUNT

Page: 1 Document Name: untitled

FMTRF ONLINE TRANSFER ENTRY 04/29/08 15:09:35
176 TRUST ONE BANK

AUTHORITY CODE: 2 LOG TYPE: L

FROM LS ACCOUNT: 17601979 DP ID/NOTE: 10 RA CODE: HSA CODE:

TO DP ACCOUNT: 1118439 DP ID/NOTE: RA CODE: HSA CODE: 000

TRANSFER AMOUNT: 28,915.00 DATE: 04-29-08

LOAN PAYDOWN: LOAN BILL DT:

GL OFFSET ACCT/CC CR:

GL OFFSET ACCT/CC DR: 558031 8888

DPOD047-NO SIGNATURE CARD ON FILE.

TRANSFER PROCESSED BY OVERRIDE FINAL LOGGED

First Louisiana
P.O. Box 52079
Shreveport, Louisiana 71135-2079
318-798-5700

FDIC

MT ZION C & D LLC
P O BOX 78102
SHREVEPORT LA 71137-8102

Date 3/30/07 Page 1
Account Number 3022390
Enclosures

---- SAVINGS ACCOUNT ----

SAVINGS NON PERSONAL

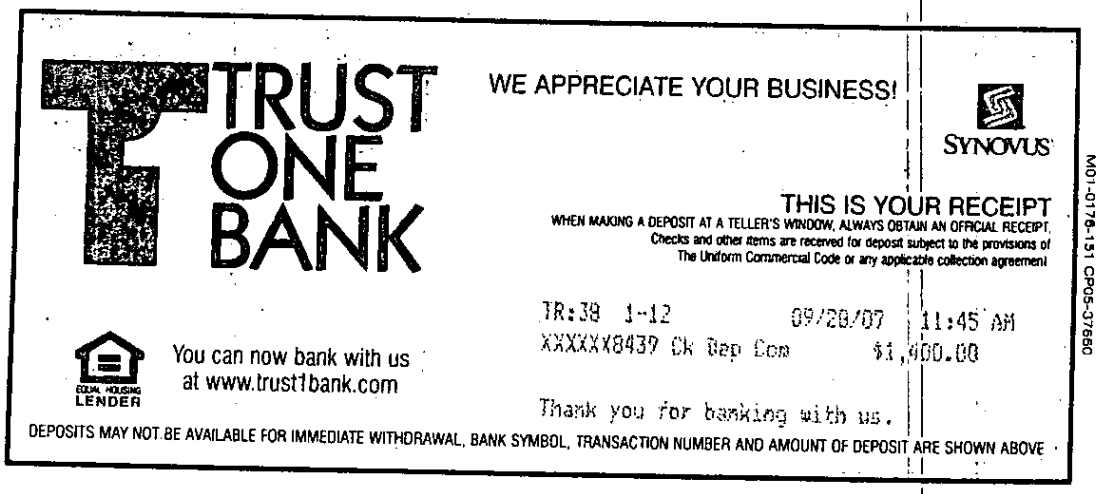
Account Number	3022390	Item Truncation	
Previous Balance	6,048.92	Statement Dates 1/01/07 thru	3/31/07
Deposits/Credits	.00	Days in the statement period	90
Checks/Debits	.00	Average Ledger	6,048
Total Service Charge	.00	Average Collected	6,048
Interest Paid	26.10	Interest Earned	26.10
Ending Balance	6,075.02	Annual Percentage Yield Earned	1.76%
		2007 Interest Paid	26.10

Deposits and Additions

Date	Description	Amount
3/31	INTEREST PAID 90 DAYS	26.10

Daily Balance Information

Date	Balance	Date	Balance
1/01	6,048.92	3/31	6,075.02



TRUST ONE BANK

WE APPRECIATE YOUR BUSINESS!

SYNOVUS

THIS IS YOUR RECEIPT

WHEN MAKING A DEPOSIT AT A TELLER'S WINDOW, ALWAYS OBTAIN AN OFFICIAL RECEIPT.
Checks and other items are received for deposit subject to the provisions of
The Uniform Commercial Code or any applicable collection agreement

TR:38 1-12 09/20/07 11:45 AM
XXXXXX8439 Ck Dep Com $1,000.00

Thank you for banking with us.

EQUAL HOUSING LENDER

You can now bank with us
at www.trust1bank.com

DEPOSITS MAY NOT BE AVAILABLE FOR IMMEDIATE WITHDRAWAL, BANK SYMBOL, TRANSACTION NUMBER AND AMOUNT OF DEPOSIT ARE SHOWN ABOVE

M01-0176-151 CP05-37650